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CALIFORNIA  
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**AMERICAN  
BEE JOURNAL**

June





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# American Bee Journal

## Italian Queens—Three-Banded



We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows: Untested queens, \$1.00; \$10 per dozen. Tested, \$1.25 each; \$12 per dozen. Select tested, \$2.00 each; \$20 per dozen. Breeding queens, \$3.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

**J. W. TAYLOR & SON**  
Dept. F, Box No. 25, Beeville, Bee Co., Texas  
Prices on nuclei on request.

## THREE-BANDED ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purposes; very gentle and not incline to swarm if you buy once you will buy always.

April 1 to July 1			
Prices	1	12	
Untested.....	\$ .75	\$ 4.25	\$ 8.00
Select untested.....	.00	5.00	0.00
Tested.....	1.25	7.00	13.00
Select tested.....	2.00	11.00	20.00

We GUARANTEE that all queens will reach you in good condition to be purely mated, and will give perfect satisfaction. All orders filled at once.

**L. L. FOREHAND**  
Fort Deposit, Alabama

## QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

Prices—Untested, April, May and June, \$1.50 each. After June 30, \$1.00 each. Tested queens of each race, \$2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

**CHARLES W. QUINN**

609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

## THE QUEEN OF ALL QUEENS



Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, \$8.00 per doz. Bees per pound, \$1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

## THREE-BANDED ITALIANS

Honey-gatherers at the following prices:

Untest., warranted purely mated queen	\$1.00
Tested.....	1.25
3 frame nucleus and untested queen.....	3.50
2 frame nucleus and untested queen.....	2.50
8 frame nucleus and untested queen.....	7.00

(Colonies shipped in a new hive.)  
Tested queens in colonies or nuclei, 50 cts. more. No disease. State inspected. Orders booked now. Shipment after June 20th.

**E. A. Leffingwell, Allen, Michigan**

## Gray Caucasians



Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, \$1.00. Select untested, \$1.25. Tested, \$1.50. Select tested, \$2.00. The best all-purpose bee.

**H. W. FULMER**  
Box 10, Andalusia, Pa.



NEW BINGHAM  
BEE SMOKER  
Patented

## BINGHAM BEE SMOKER

Nearly forty years on the market and the standard in this and many foreign countries. It is the all-important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in Beekeepers' Supplies.

Smoke Engine, 4-inch stove.....	28 oz.	\$1.25
Doctor, 3½-inch stove.....	26 oz.	.85
Two larger sizes in copper extra.....		.50
Conqueror, 3-inch stove.....	23 oz.	.75
Little Wonder, 2½-inch stove.....	16 oz.	.50

Hinged cover on the two larger sizes, postage extra.

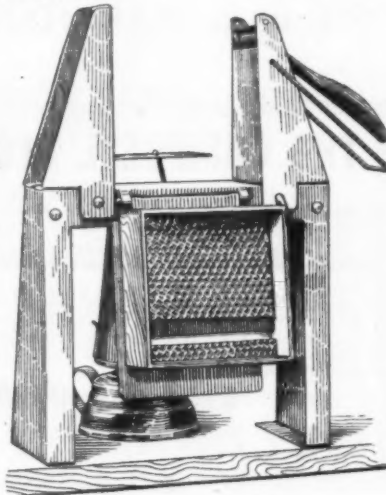
## WOODMAN'S SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, saving a great amount of labor. Hundreds of them in use. The sale this year has increased wonderfully, and they give perfect satisfaction in every case when properly operated. Dadant & Sons say: "The sale on Woodman Section Fixers now far exceeds all others."

With top and bottom starters the comb is attached to all four sides, a requirement to grade fancy. Increase the value of your crop this season by this method. The best and most successful producers, such as Dr. Miller, use top and bottom starters. Their honey would ship across the continent without breaking down, even if only half completed.

Price \$2.50 without lamp; with lamp, \$2.75. Weight, 5 pounds, postage extra.

Adjustable to any size section. Send for special circular with large illustrations.



## TIN HONEY CANS—LOW PRICES

Our three-year contract is protecting us from high prices until July 1st. We will give the beekeepers the benefit of our low prices, so be sure you secure your supply before that date. 60-lb. cans shipped from Ohio factory or Chicago—friction-top from Chicago. Give us the quantity wanted and let us figure with you. Friction-top cans and pails—5-lb. size, per 50, \$2.50; 100, \$4.50; 203, \$8.50; 1015, \$40. 10-lb. size per 50, \$3.50; 100, \$6.25; 113, \$6.75; 505, \$33.75.

**A. G. WOODMAN CO., Grand Rapids, Michigan**

## BY ALL MEANS BUY A GOOD VEIL



Muth's Ideal Bee Veil, postpaid, 75c; with other goods, 70c.

## OLD COMBS AND CAPPINGS

rendered into wax with our hydraulic wax press. Perfect work.

We buy your wax at highest market price. Write us.

## THE FRED W. MUTH COMPANY

204 Walnut Street,

Cincinnati, Ohio

# American Bee Journal

## QUEENS! QUEENS! QUEENS!

We will make a specialty of shipping Queens, Nuclei and Full Colonies from Florida during the present month. We are breeding from queens that produced a surplus of 300 pounds per colony in a 24 day honey flow in Florida, and that are unexcelled for prolificness, gentleness and honey gathering.

When you order queens from us, you get **QUALITY, PURITY AND HONEY GATHERERS**. We can fill your orders from our famous Honey Gathering Strain for Queens, Nuclei and Full Colonies promptly, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. Write for special price on orders of 50 or more. We ask you to give us a trial and let us prove to you that our stock is unexcelled by anything on the market.

### Island Bred Italian Queens

	1	6	12
Untested.....	\$1.50	\$ 7.50	\$12.00
Tested.....	2.00	10.50	18.00
Select Tested.....	3.00	15.00	24.00

Tested Breeding Queens, \$5.00 and \$10 each.

### Prices on Nuclei and Full Colonies Without Queens

1-frame nucleus.....	\$2.00	5-frame nuclei.....	\$ 5.00
2-frame nuclei.....	3.00	8-frame colony.....	8.50
3-frame nuclei.....	4.00	10 frame colony.....	10.00

Address all communications to

**THE J. E. MARCHANT BEE & HONEY COMPANY, - Canton, Ohio**

## THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

### CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

### CAMPBELL CORRESPONDENCE SCHOOL

**325 Broadway - - Billings, Montana**

## QUEENS OF MOORE'S STRAIN OF ITALIANS

### PRODUCE WORKERS

That fill the supers quick  
With honey pice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, 1, \$1.00; 6, \$5.00; 12, \$9.00

Select untested, 1, \$1.25; 6, \$6.00; 12, \$11.00

Safe arrival and satisfaction guaranteed. Circular free.

**J. P. MOORE**

Queen Breeder Rt. 1, Morgan, Ky.

# EUROPEAN FOULBROOD

is spreading in various parts of the country. The first step in its cure is a vigorous strain of **ITALIANS**

## The Root Strain of Bees have Shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foulbrood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foulbrood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

**PRICES.**—Our regular price is \$1.50 in June and \$1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for \$1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

**The A. I. ROOT COMPANY - - - Medina, Ohio**

## Embargo on Bee Supplies In the East

**B**EEKEEPERS in the Eastern States, particularly in New England, should not delay ordering their stock of supplies as early as possible. The Eastern railroads are congested and have even placed an embargo on shipments to various points, refusing to accept freight until their roads are unburdened. Ordering your requirements a month earlier than usual will not cost any more and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

Our New England States representatives, Ross Brothers Co., 90-92 Front Street, Worcester, Mass., have a large supply of "Falcon" bee-supplies, and are especially equipped to handle the New England States beekeepers' orders whether they be large or small.

Those beekeepers living in the New England States can order direct from the factory at Falconer, N. Y., or can write for the name of the nearest dealer as they find it more convenient.

Red Catalog, Postpaid

Dealers Everywhere

"Simplified Beekeeping," postpaid

**W. T. Falconer Mfg. Co., Falconer, New York**

*Where the good bee-hives come from*

## NOW IS THE TIME

**To order your supplies, and thus have everything in readiness for spring**

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen, and drone traps, swarm-catchers, feeders, honey and wax extractors, capping melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

**C. H. W. Weber & Company, 2146 Central Avenue, Cincinnati, Ohio**

**Bee  
book  
free**

### YOUR SUCCESS IN BEEKEEPING DEPENDS ON THE KIND OF BEES YOU KEEP AND HOW YOU HANDLE THEM

Blanke's 68 page book is not merely a catalog; it is an authoritative expert guide on the kind of apiary supplies that successful beekeepers have proved to be profitable in actual use. Blanke carries the largest stock of bee-supplies west of the Mississippi, and can make prompt delivery. Every article carried is perfect fitting. Whether you're a beginner or an expert beekeeper you ought to get the Blanke Bee Book—send for it today.

#### Fine Poultry Book Also Free

If you keep poultry, too, ask us for illustrated poultry book; full of valuable pointers on poultry raising, as well as a catalog of profitable poultry supplies.

**BLANKE MFG. & SUPPLY CO., PIONEERS IN BEE, POULTRY  
AND DAIRY SUPPLIES, 209 WASHINGTON, AVE., ST. LOUIS, MO**

### Q-U-E-E-N-S

Three-band Italians, bred for honey and gentleness from imported stock of medium color.

	1	6	12
Untested.....	\$.75	\$4.25	\$8.00
Select untested.....	1.00	4.75	9.00
Tested.....	1.50	8.75	17.00

Breeders, \$3.00 to \$5.00.

Bees in 1-pound packages, \$1.25; no queen. If queen is wanted, add price. Every queen purely mated. Safe delivery and perfect satisfaction guaranteed.

**N. FOREHAND  
Ft. Deposit, Alabama**

### TESTED QUEENS BY RETURN MAIL

\$1.00 each

These Queens are not culs or inferior in any way because they are cheap. They were reared last September and October, and wintered in 4-frame nuclei, expressly for our early trade in tested queens. We guarantee every queen to be good as the best. No disease in our apiary.

Untested queens early in April, \$1.00 for single queen; \$9.00 per dozen.

**J. W. K. SHAW & COMPANY  
Loreauville, Louisiana**

### BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it." Catalog & price-list free

**W. F. & JOHN BARNES  
995 Ruby St., ROCKFORD, ILLINOIS.**

### LEATHER COLORED ITALIANS



About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens \$1 each; doz., \$6. Tested, \$1.50 each. Breeders, \$3.00 to \$5.00 each.

**C. S. ENGLE, Beeville, Bee Co., Texas**



# MAKE THIS A **LEWIS YEAR**

While you are starting the year's work—getting your bees ready for business—taking stock of supplies on hand and speculating as to what the season's outcome will be

## **MAKE THIS RESOLUTION**

That you will use LEWIS BEEWARE this year—because it means success insurance to you---because it means bee-hives and parts made of the best material by skillful workmen---because it means goods accurately and systematically packed---because it means sections made of bright lumber, highly polished, accurately dovetailed and scientifically grooved.

**LEWIS HIVES ARE BUILT LIKE FURNITURE**

Lewis sections are the kind that do not break in folding

**You will find Lewis Beeware almost at your own door—thirty distributing houses in the United States and foreign countries. If you have not one of our catalogs, send for a copy at once.**

**G. B. Lewis Company**

**Exclusive Manufacturers—Lewis Beeware**

**Watertown, Wisconsin, U. S. A.**



Vol. LVI.—No. 6

HAMILTON, ILL., JUNE, 1916

MONTHLY, \$1.00 A YEAR

## GETTING YOUR HONEY TO MARKET

What Happens After the Honey Leaves the Producer and What is Necessary to Insure a Good Price?

**T**HERE has been some complaint on the part of honey producers of late that honey is not moving as it should and that prices are too low. It is the policy of the American Bee Journal to render assistance to its readers if possible and accordingly the staff correspondent was sent to Chicago to see if he could find out where the trouble is and give the producers some hints that would assist in marketing next year's crop. February is usually the dulllest month for honey sales and the dulllest possible time ought to be the best time to find where the trouble lies, so this was done in February.

In order to learn as much as possible about conditions an effort was made to follow the honey from the producer to the consumer. This involved a study of the conditions of transportation by freight or express, a visit to the wholesale district and to the retail stores which serve the best trade.

One point that soon became very apparent was that of the hundreds of commission firms on South Water street only a few handle honey at all. There were hundreds of crates of cabbages, celery, sweet potatoes, oranges, apples, and other staple products to one case of honey. It did not take the writer fifteen minutes to decide that the trouble was not overproduction.

After talking to a number of commission merchants who do not handle it at all as well as those who do, it began to look like the trouble was of quite a different kind. It looks very much to the writer like it is improper distribution and lack of incentive for the merchants to push our product. A merchant dislikes to establish a trade for a product which he is unable to supply. If even twenty per cent of the commission merchants should undertake to establish a trade in honey and should succeed to the extent that a few have done the sup-

ply would not last one third the year. If a man orders honey from his grocer and is unable to get it, maple syrup or corn syrup will take its place and the next order will be for the substitute.

Some beekeepers are forever talking about overproduction and lack of demand. When corn flakes first appeared on the market there was no de-

mand but the manufacturers proceeded to create a demand by extensive advertising and to fix the price at a point which would pay for their product and pay for the advertising in addition. In our March issue Mr. Gano tells how the orange growers have increased their output more than three hundred times and how they have increased the demand for oranges and the price at the same time.

Competition is very keen, especially in the large market centers. One firm visited, handled three million dollars worth of produce last year. This amount would make a pretty big hole in the honey crop for last season.

As it now stands there is no effort to supply honey at all seasons of the year. The crop is moved as quickly as possible after it is harvested with the result that the market is either crowded with honey or bare. A dealer who would build up a trade must depend upon buying large quantities long in advance and anticipate the demand of his trade for several months. The honey producers seem to be in about the same condition that the orange growers were in 1895 before they perfected their marketing organizations.

### WHY FREIGHT RATES ARE HIGH.

To get back to the beginning, the first thing that confronts the honey producer who would send his honey to market is the matter of high freight rates. Too much care cannot be taken in packing honey for shipment, not only to guard against damage in shipment but also to keep the number of broken packages down to the point which will enable the railroad to carry honey at a low rate and still make a profit. Too many beekeepers take the attitude that it matters very little, for in case the shipment is damaged in transit the railroad company will pay for it anyway. This is a mistaken viewpoint as was pointed out



ED. SWENSON, OF MINNESOTA, HAS NO TROUBLE SELLING HIS HONEY. HE ADVERTISES.

# American Bee Journal

by F. G. Snook, claim agent of the Erie road at the national convention. Claims for damages are a part of the regular expense account of the railroad company and when the damages absorb too large a part of the profits the rate is raised accordingly. Mr. Snook pointed out that it is not only the damage to the honey which results in a loss to the railroad but the damage to other goods which may happen to be in the same car with the broken package. As an example he cited a case where a broken package of honey damaged a shipment of silk. The railroad had to pay for both the honey and the silk, the latter of course, worth many times the value of the honey. In many cases the damage from broken packages could be avoided if the producer would use sufficient care in preparing his shipment. It is easy to see that in the end the entire loss must be borne by the honey producer. The careful shipper must divide the expense with the careless one, since the freight rate is made high enough to cover all such losses in addition to the operating expenses of the railroad.

The writer was for a time engaged in the practice of law and never during the years when his time was so occupied did he find any difficulty in

getting a fair settlement for a client for loss or damage in shipment by freight. Some railroads are much more prompt in payment than others, but all with whom we had any dealings seemed entirely willing to make good any loss for which they were responsible. There was never any necessity to start suit on cases of this kind, for once proper proof of loss was presented settlement was secured without difficulty. The attitude of the railroads seemed fair enough and if it were possible for them to get in touch with the shippers and make clear the difficulties under which they work there would be much less friction because of high freight rates.

If the beekeepers desire to reduce freight rates, the first move to make is to educate the shippers to use more care in packing for shipment and thus reduce the amount of damage. If the careless man can be kept from shipping improperly crated honey there will be no difficulty in getting a reduction of freight rates on this commodity. Until then all honey shippers must contribute something to pay the losses.

## VALUE OF ATTRACTIVE PACKAGES.

When a man goes into the large markets and sees the large variety of



DESIGN ON THE STEPHENS' COMB HONEY WRAPPERS

products that are offered, he at once learns that in order to appeal to the consumer any commodity to be used for food must be offered in the most attractive form possible. The writer saw a very good example of that in one of the well known commission houses when a retailer came in to make a purchase with which to supply his trade. There was a liberal supply of extracted honey in sixty-pound cans on the floor of the warehouse. He examined the various lots with a good deal of care, sampling each lot two or three times to make sure that the quality was good. The thing that impressed the writer, however, was not the care this man used in looking for the best flavor, but that he refused to sample honey in rusty cans. There was one shipment in cans that were rusty on top and which had a rather unattractive appearance generally. He sampled honey only in bright new cans that did not show a particle of rust. When the writer asked the commission man about the difference in price he was informed that they were compelled to sell the honey in rusty cans at from one to three cents per pound less. In spite of the difference in price this buyer would not even look at it. Probably the shipper of that lot of honey will blame the commission merchant and charge him with stealing a dollar or two per case on the shipment. It surely is poor policy to save fifteen cents by using a second hand can in which to ship the honey to market and lose from sixty cents to one dollar and eighty cents per can in making the sale. If the writer had not already been convinced of the value of new packages for honey this observation would have convinced him.

However, another example was in store, with comb honey this time. The honey was well graded and in new shipping cases but seconds had been used which showed dark streaks of wood instead of the clean white of the first quality shipping cases. This

# LOOK HERE—HONEY!

Stop that Cough  
Cure that Cold

# USE HONEY!

HAVE A CAKE 20 c.



BLUE RIBBON  
BRAND  
BUTTER AND EGGS

Try It On Pancakes!  
Very, Very Healthful!



COYNE BROTHERS

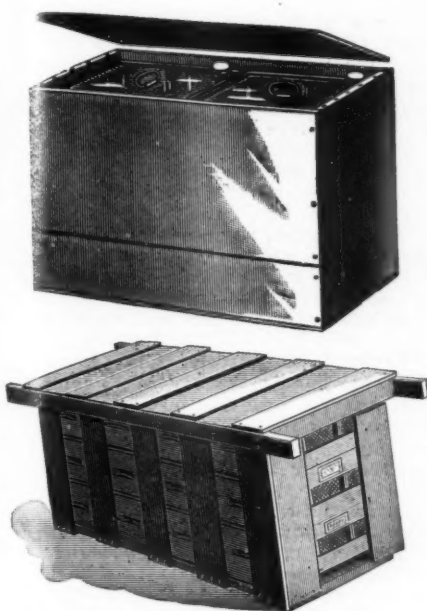
Wholesale Honey House

WHOLESALE  
FRUITS AND  
VEGETABLES

ONE OF THE COYNE PLACARDS



# American Bee Journal



## FREIGHT SHIPMENTS MUST BE PROTECTED

was on the floor of another store so that the two examples did not occur in the same establishment. Although the honey was of about the same quality, the more attractive package sold for fifty cents more per case than the other. Someone had bought inferior cases and had probably saved a few cents in the price but it cost two cents per pound in the selling price of the honey. The producer who must sell in a distant market should insist on the best possible quality in shipping cases, and before placing an order for supplies should know that the quality is O. K.

In this establishment the writer was shown a model shipment of comb honey. The grading was remarkably uniform, the sections were perfectly cleaned and the cases as clean and white as one could wish. This honey was selling at the highest price the market would afford. Possibly the curiosity of the reader may be aroused as was that of the writer to know where this honey came from. The only thing that worked against it was the fact that it was western honey and western honey has the reputation of granulating in the combs more easily than eastern honey and the buyers are somewhat partial to eastern honey on that account. This honey, however, was so nicely put up that its appearance insured a good sale. When asked where it came from the dealer replied, "Why that comes from Frank Rauchfuss of the Colorado Honey Producers." It thus became apparent that the advantage which this organization has gained in eastern markets is the result of the care used in grading and packing their product before it leaves their hands.

## ATTRACTING THE CONSUMER.

After noting the great advantage that attractive packages had in wholesale sales the writer was more interested than ever in the retail package. Retail stores were visited in the best part of Chicago where the rents paid for space would make most of us gasp.

These stores sell to high class trade and they are as neat and clean as a parlor. The first one visited offered "Airline" honey. When asked if they handled no other kind they replied that they did not. The writer then enquired whether it was because the public insisted on "Airline, owing to its advertising, that they handled no other. The reply was that it was because of the clean packages in which it was offered. The salesman then showed the comb honey in clean, tight cartons, and the extracted jars wrapped in oil paper. There was no drip and every separate section or jar was as nice and clean as any other line which they had on their shelves. The public asked for "Airline" honey because of its advertising, but most buyers would as readily accept any other if equally attractive. This dealer handled "Airline" honey because it was clean and saved him the annoyance of dirty packages. The reason was clear enough and we went out to find a store that handled something else. We found it but a few doors away and the honey was the only sticky package that we found in that store. The extracted honey packages were sealed in the ordinary way and nearly every one showed a slight drip down one side. This little

streak of honey would catch all the dust and thus it soon became anything but attractive. The label was printed in only one color so that altogether there was no comparison in the appearance of the brands. Had the writer been in search of honey for his own table it is easy to guess which he would buy if he knew nothing of either producer. Further more he left the store with the feeling that he had learned some lessons which he could utilize to good advantage in marketing his own honey crop. One does not have to look far to see that money spent in putting up our product in the most attractive package will come back several times over when we sell the crop.

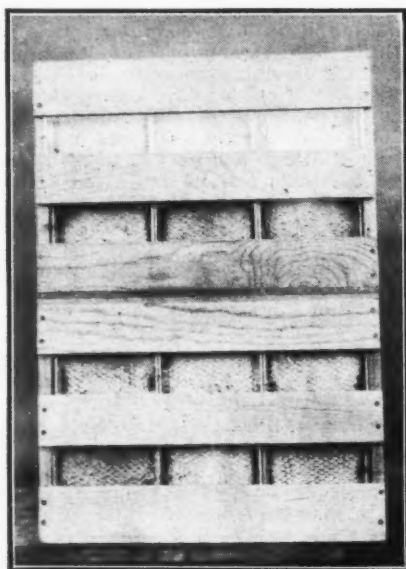
## PACKAGE MUST FIT THE TRADE.

This brings us to another consideration; the kind of package in which to ship. This depends altogether on the trade to which the honey is to be sold. If to a buyer who will sell it again under his own trade name it should have no mark of any kind excepting the net weight which the law requires. If on the other hand it is to be sold through some regular channel which recognizes the producer's trademark as an asset it



USE STANDARD PACKAGES AND HAVE THEM CLEAN AND NEAT

# American Bee Journal



THE HONEY SOLD FOR LESS WHEN DARK STREAKS SHOWED IN THE WOOD AND SHIPPING CASES

should be labeled with the producer's own mark. In one warehouse there was a big pile of shipping cases marked "J. E. Crane & Son, Middlebury, Vt." One of the cases was opened and some of the sections removed. They were very nice and each was wrapped in a clean carton with the Crane name and the usual printed matter. The dealer remarked that he had been handling Crane honey for nearly thirty years. In this case the honey was known to the buyer and the name was a guarantee of quality. But a few weeks before the writer had asked for honey in the Boston market and had been shown a jar of extracted honey with the Crane label. There is no question but that it is greatly to the advantage of the seller to market his best product under his own trade name when he can do so. However, it often happens that when he goes into a strange market the only buyers who will present themselves will be those who buy to sell again under their own name and such would not buy honey with the individual trademark. It is well to correspond with the commission merchant with whom one expects to deal and learn something of the market requirements. Coyne Brothers who are among the largest sellers of honey in the middle west have a trade which they supply with comb honey in their own cartons and with each case they send a placard for advertising purposes. This trade has come to look for the Coyne Brothers brand. Honey sold to this trade is placed in the cartons and repacked after it reaches their warehouse. Of course not all of the honey that passes through their hands is handled in this manner.

## GENERAL REQUIREMENTS.

While the writer interviewed a number of dealers both wholesale and retail the most satisfactory interviews were with Daniel J. Coyne of Coyne Brothers and R. A. Burnett. Mr.

Burnett has sold honey since 1877 and Mr. Coyne nearly as long. Mr. Coyne began as a helper at \$3.00 per week and worked up until he was getting \$60. per week before he started in business for himself. Both men have specialized in honey for many years and were in position to give many pointers on the conditions in the honey market. When asked for some general advice to the honey seller they agreed on the following:

Sell through a firm that specializes in honey, for such a firm can get a better price. Be very careful about grading and packing and use corrugated paper lining for the shipping cases to catch drip. Both agreed that in general comb honey sells better in bright wood shipping case with glass, than in corrugated paper cases, and usually arrives in better condition.

Mr. Snook, the railroad claim agent, gave the following advice in regard to shipping: Use only factory-made shipping cases and load the honey so that the combs will be parallel with the rails. This will place the shock of shipment on the edges instead of face of combs. Use cement coated nails since they hold better, and use cushioned carriers. Stencil name and address on the package instead of using a shipping tag put on with tacks. Tags often get rubbed off and the shipment goes astray while the stenciled address cannot be lost. Also avoid as far as possible the shipment of comb honey in cold weather.

## Grading and Packing Comb Honey

BY WESLEY FOSTER.

**A** FEW of our Rocky Mountain districts have a late honey flow. The beekeepers in these places have difficulty in selling satisfactorily because they cannot get their honey shipped for the early market, and if they hold for the late market in March, April and May, which is usually good,

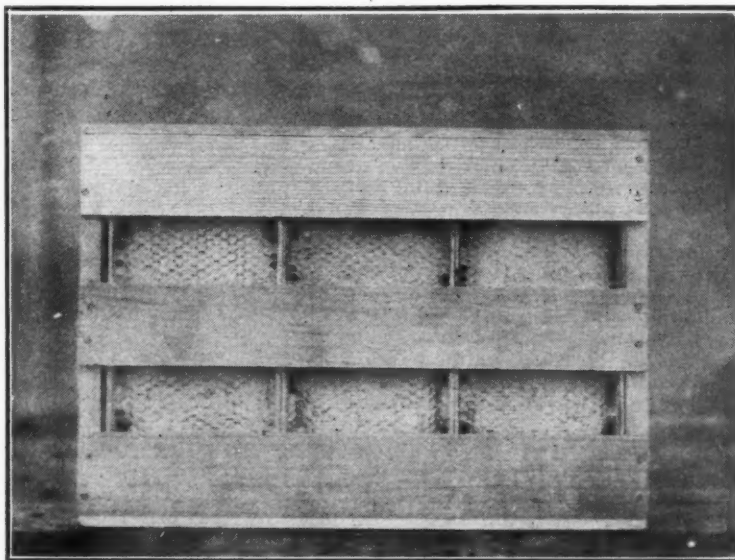
quite a proportion of the honey will granulate more or less. These mountain locations (many of them) have a dark or amber honey of poor quality, and for this reason the honey cannot be held. There is no alternative but to sell at a reduced price, which is usually done. We caution them to not hold this later honey for prices better than those offered for the early honey.

Beemen often make mistakes of this kind. An instance comes to mind. One car of comb honey was sold last fall at a very satisfactory price; in fact, at a higher price than had ever been secured for honey in that locality. Not a great distance from there was another car of honey for which 5 cents a case less was offered. The beekeepers held out for the additional 5 cents, and the buyer refused to take it. As a consequence the honey was not sold for some time, and when a buyer was secured the honey brought 35 cents a case less than the price originally offered.

I often hear it said that what beekeepers need is several buyers buying honey in a locality and competing with each other for the honey. This might help, but it is just a little easier for the buyers than for the beekeepers to have an understanding. Where prices around \$3.00 a case for comb honey can be secured, the honey should be sold. No beekeepers should have had to take less than \$2.75 for fancy honey last year in the Rocky Mountain country. Some prices lower than this were paid, but it was for honey packed late in the season, and some of it was not very carefully graded.

It is still the practice for some beemen to put sections in the No. 2 grad if half or two-thirds of one side of the section is sealed, provided it is good weight. Then another mistake is packing honey below the minimum stamped. It is strange that some will take the risk of getting into trouble with Uncle Sam, but it is done in some instances, and with the consent of the buyers.

The minimum net weight is placed at 10 ounces for No. 2, and it should under no circumstances run below



BEST QUALITY OF SHIPPING CASES SHOULD BE USED



# American Bee Journal

this. The average for the whole case should be well above this figure, and some of the buyers are requiring it. Weight of the honey carries farther than some of us realize.

Another thing that I have noticed is the packing of decidedly light amber and even amber combs in with white fancy honey. The objection to light amber and amber fancy honey cannot be well made, but the mixing of grades, shades and colors will not do. Let us follow the spirit and the letter of the rules as closely as it is possible for us to interpret them.

The poor quality of a few beekeepers' grading has driven buyers away from some of our heavy producing districts. Boulder, Colo.

## Marketing

BY ARTHUR C. MILLER.

"NO man is so far from market as he who has nothing to sell," is an old saying, but perhaps more true today than ever before. "Nothing to sell," means nothing which the market wants quite as much as absence of anything whatsoever. Some of the veteran producers, as well as some of the big producers who are not veterans, will say it does not apply to them. Perhaps so; however, it may. Let us see.

The Ontario man produces some crystal clear honey and tries to sell it to persons who have always had a strong dark honey. It does not sell. Reverse the conditions and the results are the same, but more understandable to the producer of light honeys. Honeys of familiar colors but unfamiliar flavors cause more trouble. They retail readily on their looks, but "repeat orders" fail to come. To the producer this is often hard to understand. To him his honey is as fine as the finest. All was well while he marketed it where the consumers were familiar with it, but when he sent it into other markets he was disappointed. Therefore, producing a good honey is only one step towards selling it. Knowing where to market it is equally important. The producer far from big centers of consumption must sell to jobbing houses who know where and how to place the honeys of all sections. So, also, must many producers nearer to markets but for sundry personal reasons not able to sell direct to retailers or consumers.

To these two classes quantity of crop (per colony yield) is the first consideration and quality is the second.

To the man selling to retailers or consumers, quality is or should be (and eventually will be) the first consideration, and per colony yield the second. These men can well afford to shift their apiaries until they find locations giving honeys of the finest flavors—natural blends. I have several times heard this policy scoffed at and quite as many times I have seen men who appreciated it take the market right away from the scoffers and often at higher prices. And the longer I raise and sell honey the more am I confirmed in my belief that all producers will profit by placing quality first. By quality I not only mean well ripened honey but fine flavored honey. The ignorant

marketing of ill-flavored honeys or honeys not fitted to the markets they are offered in has been the cause of many persons stopping buying honey. There are but few of us who have not known or heard of such instances.

Therefore, as the first condition of good marketing let us place *quality*, good flavor, good body and good color.

As the second essential the honey should be put in new and perfectly clean packages fixed break-proof. Second-hand cans and other packages of an inferior character cost the producers each year many times more than they save in the first cost. It is almost impossible to make some men see this, but sooner or later it will come home to them in a forceful unpleasant way.

The foregoing applies particularly to extracted honey. In the matter of comb honey there are several other factors. First, is the importance of a fine honey from the same source year after year, and the locations giving a natural blend prove to be the most satisfactory in the long run. The producer can well afford to search long and carefully for suitable locations. And when he fails to get his sections filled with his usual grade of honey he had better dispose of it in anyway than to his regular trade. Comb honey of any particular brand is expected by the consumer to be the same year after year. The difficulty in obtaining this result will be well appreciated by all veterans.

I believe that no sections should be shipped away to any general market unless the combs fill the sections from top to bottom and are fully sealed; in other words, of extra fancy finish. I believe such a policy will in the long run prove the most profitable one. Could the producers see the sticky messes which reach the markets they might or at least some of them might be convinced of the folly of trying to ship sections other than those fully filled. Cartons remedy this somewhat, but often these are so sticky as to be almost or quite unsalable. If No. 1 or less perfectly filled sections must be sent to more or less distant markets they should be re-cartoned after reaching their destination if at all soiled.

Another cause of trouble with comb honey is insufficiently ripened honey. Sections containing honey naturally of light body or with unsealed cells containing honey, should be subjected to a drying process until the honey is thick and "gummy." Still another cause of trouble is the use of the cheapest possible cases. Use cases big enough for a layer of corrugated paper beneath, and all around. And the thicker the bottom and top of the case, the better. If the store clerk is watched for a few minutes and you see the way one case is banged down on top of another or dropped onto the floor with a bump, a better understanding will be had of the need of amply corrugated cushions and thick cases. Fumigation before shipping is desirable unless the honey is to be repacked at its destination. Successful comb honey marketing is a fine art which cannot be acquired in a day. If you do not fully understand it in all its intricacies you had better, both for yourself and for the rest of us, turn it over to some one who does.

The third essential of general selling

is a knowledge of markets, something which relatively few producers have. It will be far better for most of them to join in a producers' association which can employ an expert to do the selling. And this brings up the matter of expenditures for literature, for knowledge of markets, and for associations. Beekeepers, like so many other agriculturists, are worse than parsimonious in such matters. Men whose incomes range from \$3000 to \$10,000 a year will haggle over dues of a dollar a year to an association and will say they can only afford one trade paper and at that will take a 5¢ cent one in preference to a dollar one. Ask them to spend \$25 for such things and they will drop in a faint.

It would take a surgical operation to get wisdom into the heads of those persons. But there are others who if shown a saving or a profit in such expenditures will make them. Unfortunately the men best fitted to explain the matter are not always the ones on whom such duty devolves. The broad gauge men are not always the ones who take the most active part in the beekeepers' associations, and in the cooperative marketing bodies they are all too frequently outnumbered and out-voted by men of small experience and narrow vision. For a short time I have been urging the big fellows of certain sections to get together, assess themselves a sufficient amount to yield a substantial fund for work and take on the lesser men only as they find them willing to cooperate and be "broad gauge." The policy heretofore has been to "bid low to get the crowd." It surely has been tried long enough to prove its wisdom; now it is time to change.

Many producers for sundry reasons prefer to do their own selling, and if they had accurate knowledge of conditions of crop and markets would do so successfully. But it is seldom that they have such information or know where to get it. They depend on some one trade paper, and if that chances to err they suffer. To illustrate: Last fall one of the trade papers said that, owing to the large crop, prices would rule 15 to 20 percent below last year. Depending on that many producers sold for about that much less. But other producers knew better; they had the National Government's crop report, reports from various associations and personal letters from different parts of the country and they sold for 30 to 50 percent above what the others got. That fuller knowledge did not cost those who had it over three or four dollars a year. Did it pay? Was it not safer to depend on half a dozen sources of information and base action on deductions from them than to depend on one which this time happened to be wrong? For the crop proved to be short of the market and prices were equal to and in some places above last year.

Finally there is the matter of the cost of producing the crop.

Figuring costs is not a simple matter and needs fuller consideration than can be given it now. Perhaps it should have preceded this article on marketing, but the latter is still fresh in your minds (painfully so with some of you), so I guess it is as well to treat it first.

Providence, R. I.



# American Bee Journal



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## THE EDITOR'S VIEWPOINT

### June Management

This is the most important month of the year, in the North and Middle States, for it is the month of swarms and large honey crop. Be sure and have the supers on all strong colonies early, especially if they are whitening the tops of the brood-combs. Give plenty of entrance room. Well shaded hives, young queens and ample ventilation will help prevent swarming, if there is also plenty of room for the surplus. An excess of drones is an incentive to swarming, as the burly noisy fellows are much in the way. No drones are reared where there is no drone-comb.

The bees should not be permitted to hang out in clusters. When this happens they need more super room, more ventilation or more shade.

If you want increase, beware of overdoing it. Better make less divisions and have all your colonies strong. Be sure that the queens reared are from the best mothers. Strong colonies with prolific queens are the key to success.

### Beekeeping in Wisconsin

This is the title of Bulletin No. 264 of the Agricultural Experiment Station of the Wisconsin University. It is written by N. E. and L. V. France, and nothing more needs be said concerning it, as these names recommend it. Beekeeping is coming more and more to the front, and these publications are a great help.

### The Sense Organs of the Bee

In this number our readers will find the first article of a summary by Dr. N. E. McIndoo concerning his studies of the sense organs of the honeybee. If Dr. McIndoo did not already possess titles to the attention of the public by his previous studies, it would only require looking at the photo which this

issue also contains to recognize that we have to do with as serious and positive a scientist as Uncle Sam ever found among his people. Dr. McIndoo has volunteered to refrain from any scientific expressions in the descriptions here published, in order to make himself fully intelligible to all. As the manner in which bees recognize each other or distinguish between odors or flavors is of practical importance, we are all interested in the studies of this question. We may also take pride in the fact that America has come to the front with scientists who are leaving an imprint equal to that of the leaders in the Old World.

### Loosestrife Honey

We received a short time ago a sample of loosestrife honey from Mr. R. H. Terpenning, of New York. This is the first time we have heard of this plant yielding honey in sufficient quantity to be graded separately. The honey is a very dark amber and rather strong in flavor. The "twang" resembles slightly that of the sumac of the East except that it is much stronger.

### Standard Grades of Honey

We learn from the Western Honey Bee that California beekeepers are just now undertaking to do what should have been done many years ago, to standardize the grades of honey. Honey comes from so many sources and the mixtures vary to such an extent that it will be rather difficult to establish a standard, but once a standard is established it will be of untold value in marketing our product.

California beekeepers are informed that money can be borrowed on warehouse receipts of honey, at low rates, provided that it has been standardized, inspected and labeled by the State.

The matter of determining standards

has been settled; honey will be inspected by the State Market Commission and a certificate issued showing the grade, and the packages labeled accordingly. With this assurance of the quality of the honey which will enable banking houses to estimate the probable price, money can be borrowed to nearly the full value of the crop at a very low rate of interest (probably from 3½ to 4 percent), which will enable the producer to hold his crop for a time in order to take advantage of the most favorable market.

We commend this move to beekeepers of other States.



DR. N. E. MCINDOO

### Foreign Beekeeping

We are happy to say that, in spite of the bloodshed and strife, in war-torn Europe, the progress of beekeeping is continuing. The Swiss and Italian bee journals are appearing regularly. The French-Swiss or Romanic "Bulletin d'Apiculture" has not missed a single number. Its former editor, Mr. Ulric Gubler, resigned his editorial chair in March of last year, on account of advanced age. He was 80 years old on May 18, 1915, and this anniversary was celebrated not only by the Orphan's Home of which he has been the manager for over a quarter of a century, but also by the city and Canton of Neuchatel, who sent him numerous and valuable presents. He is still interested in bees. His successor in the management of the Bulletin is Mr. Schumacher, of Dailens, Vaud.

In France, the ancient l'Apiculteur, now the oldest bee magazine in the world, is still published, but irregularly. Some other journals, such as "L'Abeille

## American Bee Journal

Bourguignonne" and the "Revue Française d'Apiculture" appear as usual. An occasional German bee journal reaches us. In Russia also, the bee magazines are continuing in spite of difficulties. We have lately received from Tiflis, Transcaucasia, a publication describing the gray Caucasian bees as distinguished from the yellow bees of Erivan or Persian bees. The former are said to be much more hardy than the latter. A map in three colors attached to the pamphlet shows the spots, between the Black Sea and the Caspian Sea, in which the pure gray Caucasian bee exists, as well as the territory of the bee of Lenkoran and of the crosses between the two.

### The Smoke-Distress Method

D. E. Lhommedieu writes: "In your smoked-in queen, you forgot to give the queen a puff or two as she goes in, page 135."

I gave on page 135 the latest directions, as given by Arthur C. Miller himself, *Gleanings*, page 108. Whether Mr. Miller thought that final puff unimportant, or whether it was omitted by oversight I do not know. At any rate it was a part of previous directions, and I thank Mr. Lhommedieu for calling attention to it. C. C. M.

### Illinois Beekeepers and the State Fair

The Executive Committee of the Illinois State Beekeepers' Association and the committee appointed to try to secure a special apiary building at the State Fair Grounds met at Peoria April 15. The members present were E. J. Baxter, president of the association, Dr. A. C. Baxter, of Springfield, Aaron Coppin, of Wenona, C. P. Dadant, of Hamilton, and A. L. Kildow, State Inspector of Apiaries. Messrs. Jas. A. Stone and C. Becker were absent.

Dr. Baxter reported to the committee his interview with the secretary of the State Fair as follows:

"The Agricultural Fair Management agree to give to the Apiary Department for 1916 all the ground floor of the northeast wing of the Dome Building, at the Fair. They assure the committee that it will not be difficult to secure a special building for bees and honey, for 1917, if a good exhibit is made in 1916. Up to this time, they say, only a limited exhibit has been made."

The date of the Fair is Sept. 15-23.

The committee decided that the State Beekeepers' Association should make an association exhibit, non-competing and educational, and that the beekeepers should be urged to contribute voluntary and educational exhibits aside from the personal and competing exhibits which may be entered by individuals.

The beekeepers of the State are also requested to send or bring combs of honey to be publicly used in running a honey extractor every day of the Fair, as was done the past season at the Minnesota State Fair. For further information on this address Dr. A. C. Baxter, 301 Leland Building, Springfield, Ill., who will have charge of this part of the display. Honey received in this way will be fully accounted for and the empty combs returned.

The committee recommends to the State Association at its next meeting to apply for a bee and honey building measuring 80x140 feet at the Fair Grounds. The suggestion is made that one long side of this building be next to a grove of trees or a row of shrubbery and arranged with an upper gallery to place hives of bees or nuclei, with an outlet for their flight under the eaves, the hives to be glass hives or nuclei for observation and display.

The committee voted to apply to the State Fair Management, for 1917, for a list of premiums amounting to at least as much as is allowed by the State of Minnesota, the amount of which is \$1168. A sub-committee is to be appointed by Pres. Baxter for that purpose.

The American Bee Journal urges the beekeepers of Illinois to give their hearty support to the State Fair move, as the exhibit of honey and bees on a large scale will be sure to increase the demand for their product.

### Wintering Bees by Specialists

A very interesting statement comes to us from the division of bee-culture of the Minnesota University. Reports received from 125 beekeepers show that those who keep 50 colonies or more have averaged only 5.3 percent of loss, while those who own less than 50 colonies have suffered a loss of 11.2 percent average. It indicates that specialists are more successful than average beekeepers. It also shows that many of the losses of wintering can be avoided by proper methods. As Instructor L. V. France puts it: "The necessity for the average beekeeper to take notice and secure the best information on proper wintering conditions is apparent."

### A Suggestion to Writers

In current magazines we note the advertisement of a new book entitled "Cuban Cane Sugar," which is said to be "an authoritative new book by Robert Wiles, on Cuban cane sugar and its development as an industry."

There is a field which the honey producers should cultivate as well. There should be a good book on honey, not for beekeepers but for general readers and for a reference book. About the only information on honey to be found

in the libraries is such meager mention as is to be found in the books on bee-keeping.

We need an authoritative book on the subject which shall give only enough of beekeeping to inform the public as to how it is produced. Full information as to the extent and value of the industry should be included, as well as extended and reliable information about the sources of honey and its various uses and the value of bees in pollination, etc. The work should be published by one of the leading book publishing houses, to insure as wide a distribution as possible. If necessary to insure its appearance from such a well known publishing house, the beekeeping interests should guarantee a sufficient support to induce them to bring it out.

The material should be prepared in a popular form in the best literary style possible, in order to make it attractive to the patrons of the libraries. There are numerous hack writers who employ all their time in the preparation of popular articles for newspapers and magazines. Such writers would find it difficult, indeed, to get material enough concerning honey in the average library to fill a half column in a newspaper.

### Australian Bee Farming

By the kindness of Mr. Geo. Nisbet, we have received an Australian Government pamphlet entitled, "Bee Farming." It may be a surprise to some American beekeepers to read the following passage:

"In some States there are practically no restrictions on the range of country over which beekeepers may farm. In others, bee farmers' leases, giving apiarists the right to farm over a mile or two of country, are to be obtained at the rate of one cent an acre.

"Victorian conditions make it necessary for a bee farmer on Crown lands to take out two licences, the one which gives him sole permission to use one acre of land as a site for his apiary, and the second—what is known as a bee-range—secures the exclusive use of the bee-flora to the holder over a radius of one mile. No other licence is allowed at a lesser distance than two miles. The first lease, that for the apiary site, costs \$0.24 per acre per annum, and the second amounts to one cent an acre, or approximately \$20.60 per annum. Equally liberal conditions are available in many of the other States."

No doubt a good many beekeepers in this country would be glad to pay a round sum to be assured that no one else would plant an apiary within two miles. Those Australians are up-to-date people.

C. C. M.



## A SHORT TRIP INTO TEXAS

The First of a Series of Articles By the Editor, Giving His Impressions of Texas Beekeeping

**A** SEVERE critic told me that a magazine devoted to bees is a technical journal, and that nothing in the way of travel experiences is proper in such a publication. But hundreds of readers appear to have enjoyed the account of my trip to Europe, which was surely anything but technical. Even some Europeans whose homes I visited seemed to delight in it. So I have concluded to follow a similar path and now give warning to the solemn lover of exclusively technical beekeeping discussions to stop right here and pass on to another article. Neither will I take it for granted that any of you have ever visited Texas, but will speak of it as if it were a newly discovered spot.

A cold Sunday morning, early in March, when the thermometer stood at 20 degrees, and Cooper Lake, in front of our home, still had a coat of ice 8 or 10 inches thick, wife and I took the train for San Antonio. Our tickets were bought by way of St. Louis and the Iron Mountain railroad.

The ground was covered with snow, but we fully expected to see this white mantle disappear before we reached St. Louis, 180 miles south. We were disappointed. There was still more snow at St. Louis than at home, but the temperature was already milder. The next morning when we awoke, we were in Texas and much of the shrubbery along the tracks showed green buds, ready to come out in leaves. A few peach trees, around farm homes, were in full bloom. But we were yet far from the end of our journey. Texarkana, the last city in Arkansas, before reaching the Texas line, is just a little over half way between St. Louis and San Antonio.

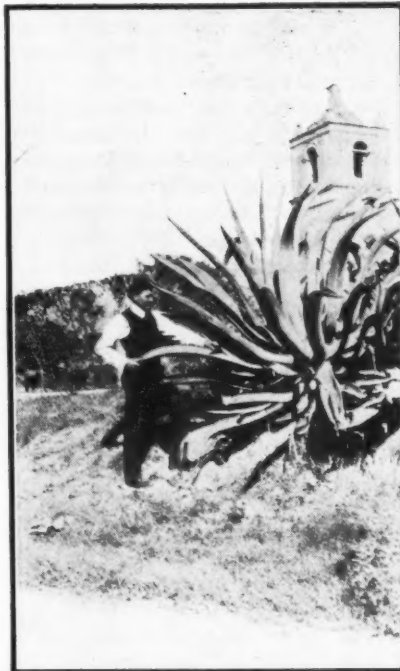
Did you ever try to measure the State of Texas, as compared to other States of the Union? Placing them end to end, four such States could not find room, from east to west, on the map of the United States. Another State, of the same size, placed north of Texas, would reach into North Dakota. Since we were going into the south central part of the State, the reader can understand why we traveled in Texas from 6 a.m. to 8 p.m., on the "Sunshine Special." We crossed the Red river and understood its name. It is *red*, with emphasis.

We were going towards the sunshine, indeed, and soon found it out. The temperature slowly raised during the day, until at 2 p.m. the thermometer marked 90 degrees in the Pullman coach. Wife protested that if this were Texas winter temperature she wanted none of it. She proposed to return home as promptly as possible.

The nature of the landscape changes along the way. Hills change to plains. Brush and pines change to immense fields cultivated for corn and cotton. After passing Austin, the capital, we begin to see the cactus and the "chap-

arral," composed of scrubby live oak and dozens of sorts of shrubbery. I had already seen this, in a previous trip to Texas, but had not fully comprehended that such lands as these were the best honey-producing sections of Texas, for many of these shrubs are honey producers.

The weather was dry, the dust and the heat made the trip tiresome. But we nevertheless watched the landscape. Once in a while we saw an apiary, in the brush. We found that some people in Texas know how to advertise, for as the train sped along we read a sign, in large letters: "B. Robinson, Taylor,



A MAGUEY PLANT (CENTURY PLANT)—OLD SPANISH MISSION IN THE DISTANCE

Tex., Honey for Sale," just in front of a fair-sized apiary. Good! That is the way to succeed.

The sun at last went down, to our great relief, and the "Sunshine" reached San Antonio station at 8 p.m., where Mr. Le Sturgeon and his wife awaited us. Look at the cheerful face shown herewith and imagine how glad you would be to have the owner of it welcome you at the end of an 1100 mile trip. They accompanied us to our hotel, putting themselves at our command for the following day. But we needed rest and thought we would certainly have to get some summer clothes before we began our visits. This was Monday, and the first beekeepers' meeting was set for Thursday, at Pearsall, in Frio county. So we had ample time before us.

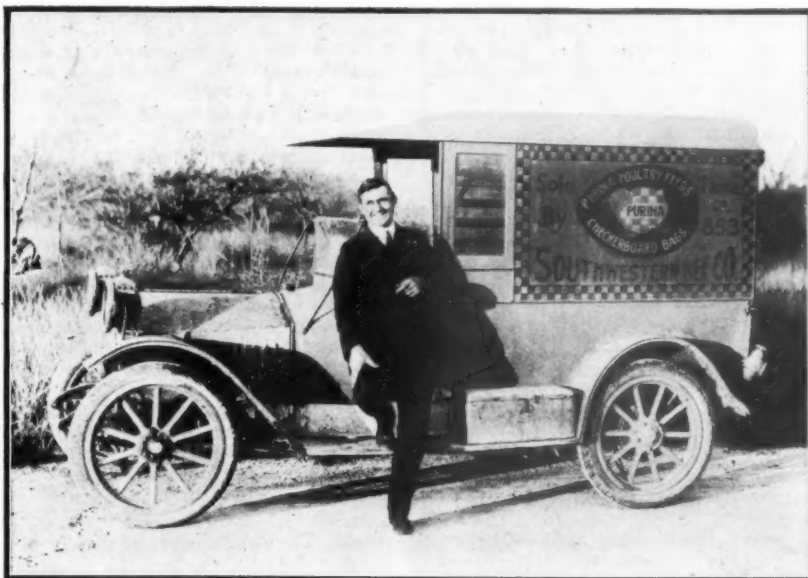
The night was pleasant, so was every night of our stay, as the Gulf breeze blows over the land. The next day was warm, but not as torrid as we had anticipated, from the previous day's experience, and we found our clothes very endurable. We became reconciled to the climate and cheerfully agreed to the continuation of our peregrinations. There was a very decided advantage to the climate. We both had left home with colds. They had entirely disappeared during that hot day's ride and did not come back. No wonder tourists come to San Antonio for lung troubles.

We expected to rest for an entire day. But we counted without our hosts. About 3 p.m., friend Le Sturgeon came with the president of the local beekeepers' association, Mr. Lewis Maverick, an active lawyer and extensive beekeeper, and invited us to ride in Mr. Maverick's auto. How to refuse? We accepted and visited the city, the parks, the barracks from which a few days later the soldiers were to start in search of the villain Villa. We visited an apiary and found that the brush, the chaparral, was thriving even within city limits. The mesquite (*Prosopis glandulosa*), a noted honey-producing tree looms up everywhere in the open land. The trees were just budding and promised abundant bloom. They are in appearance, at a distance, somewhat like an ill-kept fruit tree; that is, as long as the leaves are not on. Wife wondered why they did not plant their orchards in rows. They did look like ill-kept orchards, until we reached the real chaparral, which is a wilderness.

The mesquite is a dry season honey-producer. I was told by a number of apiarists, in different sections of Texas, that the driest years are the best for mesquite honey. Of course, there is a limit. When we were there, they had not had an honest rain for eight months and they needed one badly. The mesquite has two distinct blooming periods, one in March-April, the other in June-July. The reason why dry weather is favorable to honey-production from that tree is not far to seek. In wet weather it produces abundant stems and leaves and only a little bloom. In dry weather, like all suffering vegetation, it blooms abundantly.

Discussing this matter, Mr. Le Sturgeon said to me: "The provisions of Nature are wonderful and her mosaic fits together gracefully. I have always mentioned this trait of the mesquite shrub, when striving to point out her wonderful adaptations. In wet or even normal years, the rainfall produces grass, corn, weeds and foliage for the hungry fauna to feed upon, but when the drouth comes and the long arid summer stretches before them, the mesquite mesas spring into bloom and tons of the succulent and life-sustaining mesquite beans hang within easy reach





OUR JOVIAL HOST E. G. LE STOURGEON, AND HIS AUTO USED FOR DELIVERIES AND OUTYARD BEEKEEPING

or fall upon the ground to "temper the wind."

The mesquite country does not extend more than 30 miles north of San Antonio and perhaps 60 miles east, but to the south it extends beyond the Rio Grande. The bees do well even within a mile of that pretty city of a hundred thousand. Why brush should be left to grow undisturbed close to a large city is explained by water shortage. It is a semi-arid climate and only where irrigation is easy can they depend upon bountiful farm crops. Cattle and bees may be kept and made to thrive with but little trouble comparatively. I then understood why so many bee associations exist within a few counties while many others have none.

Honey production is mainly "bulk comb honey" throughout Texas. I knew of it long ago, but did not know that it was so universal. Ten-frame hives, and half-story supers with frames filled with thin-surplus foundation are found everywhere. When the comb is filled and sealed, it is carefully cut to fit as closely as possible in tin pails or cans. The few vacant corners are then filled with extracted honey, of which enough is produced for that purpose. Sections of comb honey are rarely to be found, not because the beekeepers are unacquainted with the methods, but because they say that bulk honey sells best and pays best. To prove that they are well informed in progressive beekeeping it is only necessary to say that in all our trip we did not see a single box-hive. The Texas foulbrood law empowers the State Entomologist "to order any owner or possessor of bees dwelling in hives without movable frames, or not permitting of ready examination, to transfer such bees to a movable-frame hive within a specified time." The beekeepers of Texas seem to be of the opinion that this is right. In fact, this law was gotten up at their urgent request and they are looking after its enforcement. But more of this later, for we will soon meet the State Entomologist himself and we will look further into the matter.

The Texas crop of early honey appears to have been good. A friend sends us this item from Beeville:

"The drouth has been a severe blow to cattlemen and to farmers, but not so with the bee-men. Already two carloads of honey cans have been received here and they have gone like the proverbial hot cakes. Three more carloads have been ordered. Each carload has cans enough to put up 75,000 pounds of honey. The apiaries of this section are busy places now and we are glad the bee-men, at least, have profited by the drouth."

[To be continued.]

## The Senses of the Honeybee

BY N. E. MC INDOO PH.D.,  
(Bureau of Entomology, Washington, D. C.)

IN this Journal, June, 1914, pages 197-200, the writer gives an extract of his first bulletin on the senses of smell of the honeybee. A second bul-

letin pertaining to the same subject has recently been published in the Smithsonian Miscellaneous Collections, Vol. 65, No. 14. This bulletin, entitled, "The Sense Organs on the Mouth-parts of the Honeybee," deals with the sense of smell, taste and touch. In order that beekeepers may better understand the various activities of their bees, the writer will briefly summarize the results in this second bulletin and then add a few remarks about the uses of the sense of smell and about the other senses in the honeybee.

Up to date the writer has found organs of smell on the legs, wings, sting, mandibles ("jaws"), tongue, labial palpi and maxillæ (appendages by the tongue), on the "throat," in the cavity leading to the mouth, on the sides of head, and a few at the extreme bases of the antennæ (feelers). As an average a drone has about 3000 of these organs; a worker about 2800, and a queen about 2200. Experiments showed that drones smell slightly better than workers and considerably better than queens.

Since drones have only one duty to perform, it would appear that their highly developed sense of smell is used primarily in mating, and as a queen is more or less an egg-laying machine, such an acute sense of smell is not needed, and compared with that of a worker, it seems that her ability to smell is somewhat degenerated.

In the higher animals the senses of smell and taste are not sharply separated, and in the honeybee it will be shown that these two senses are not separated at all. For this reason the honeybee possesses a combined sense of smell and taste. The mouth-parts cannot be removed, nor can they be covered with any sticky substance without making the bees abnormal while eating; therefore, such operations are useless in trying to find out how bees distinguish differences between foods. On account of the abnormal conditions resulting from any kind of an operation, it was decided to find out whether bees have likes and dislikes in regard to foods and to make a careful study of all the sense organs on and near the mouth-parts.

In determining the first point more



BEEES UNDER THE MESQUITE-APIARY OF B. M. CARAWAY AT MATHIS, TEX.

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than 5500 bees were used in their normal state. Foods fed to them contained repellents and those having the four attributes of human taste: sweet, bitter, sour, and salty. The following substances are the most important ones used: carbolic acid, oil of peppermint, whiskey, various acids, formaldehyde, kerosene, lime-sulphur, seven different kinds of sugars, quinine, strychnine, lemon juice, and 11 different salts, including our common table salt. Some of these substances were mixed with honey, others were mixed with cane-sugar, while the various sugars were made into candies. Cane-sugar candy, three varieties of honey, sugar syrup honey and pollen mixed, and honey and sugar mixed, not containing any of the above substances, were also fed to bees.

It was found that bees generally avoid foods containing repellents unless they are forced to eat them when the pure foods are removed. In such cases the bees show preferences between the foods containing the various repellents. They are fond of their favorite food flavored with whiskey, but they do not like it as well as pure honey.

Bees show decided preferences between candies made of various sugars. They cannot be forced to eat saccharine (a sugar 500 times as sweet as cane sugar) candy, but greedily eat manose (a simple sugar) candy which kills them as quickly as strychnine. They are particularly fond of cane-sugar, levulose (fruit sugar) and maltose (malt sugar) candies, but care little for dextrine (a starch gum and not a sugar) and lactose (milk sugar) candies. They care little for raffinose (a sugar from a certain Australian eucalyptus plant) candy when they have the preference of cane-sugar, levulose or maltose candy, but much prefer it to dextrose (grape sugar) candy. Bees can be forced to eat any of these candies, except saccharine, when no other food is present, but these experiments were not aimed to determine what candies agree with them best. Of these candies, they like cane-sugar candy best, although levulose candy is a close second.

The bees liked fresh basswood honey much better than an old dark-colored honey given to them. The source of the latter honey was unknown. It was taken in the crystallized form from old combs and was then melted. They care little for either sugar syrup (half and half), or for basswood honey and pollen (4 parts honey to 1 part pollen), or for basswood honey and sugar (half and half) when they are given pure basswood honey at the same time.

In these experiments bees also showed marked preferences between foods containing bitter and sour substances and between the foods containing the various salts. They could scarcely be forced to eat chinquapin honey, and in a few instances showed decided preferences between certain foods while the writer could detect only little or no differences between the same foods.

The preceding results clearly demonstrate that bees have likes and dislikes in regard to foods and can discriminate between some foods better than we can. As a general rule, foods agreeable to us are also agreeable to

bees, but there are a few marked exceptions. Substitutes for honey as food for bees may be better than honey in a few instances, but these investigations show that no substitute can be had which will be liked by them as well as the best pure honey.

That bees must first eat more or less of the foods before being able to discriminate differences between them, unless they contain repellents, indicates that bees have a sense of taste, provided this discrimination is not accomplished by means of the sense of smell. This point was decided after making a study of all the sense organs on and near the mouth-parts. Only two types of sense organs were found. The organs of smell, already briefly discussed, make up the first type. These cannot be used as taste organs because they rarely, and perhaps never, come in contact with the liquid food being eaten. Sense hairs form the second type. These also cannot serve as taste organs because the liquid foods cannot pass through their walls in order to stimulate the nerves attached to them.

Since bees are covered with a hard outside coat, they cannot feel weak pressures, and for this reason certain hairs have become connected with nerves. Nearly all the hairs on the mouth-parts are connected with nerves. The tongue is quite sensitive to touch, because it has about 85 sense hairs, which lie among the dead hairs so easily seen on this appendage. These long hairs are not true hairs and are not connected with nerves. The mandibles or "jaws" are literally covered with sense hairs and organs of smell. These hairs are irregularly scattered, except there is a curved row at the tip of each mandible on the outer side. The hairs in this row curve slightly over the edge of the mandible toward the biting surface or inner side. These hairs may be roughly compared to the fingers at the tips of the trunks of elephants, although they are certainly many, many times as sensitive. In fact, the tips of the most sensitive human fingers imaginable cannot be compared in sensitiveness to the mouth-parts of a worker-bee. Such a keen sense of touch easily explains how workers can handle the eggs and larvæ without injuring them, and why they are able to mold the walls of their cells of a uniform thickness. The sense hairs of the mouth-parts and also those on the antennæ enable the bees to communicate with each other merely by touch.

There are a few sense hairs in the cavity leading to the mouth, and the fleshy three-lobed "tongue" hanging in front of the mouth bears two large groups of sense hairs. In the mouth, just in front of the pharynx, there are two more large groups of sense hairs.

All over the head, on the throat, on the legs and even on the body of the bee, there are sense hairs so located that it is impossible for a person to touch a bee without touching some of these hairs.

We are now ready to explain how bees eat solid and liquid foods. By means of sense hairs on the mandibles, these appendages can separate the pollen or bee-bread into pieces small enough to be swallowed. These pieces

are then dropped upon the extreme base of the tongue which resembles a small crane in that it may be moved up and down, backward and forward and from side to side. The upward movement carries the pollen to the mouth, where it is pushed into the mouth by means of the fleshy "tongue" covered with sense hairs already mentioned. Should a piece of pollen be too large to pass through the esophagus, it could not pass between the two groups of sense hairs just in front of the pharynx without touching them. In such a case these hairs would cause the muscles attached to the sides of the mouth to contract whereby the pollen would be thrown to the exterior. It is thus seen that these sense hairs serve as a safety device to prevent the bee from swallowing pieces of solid food too large to pass through the esophagus.

When a bee smells food it at once extends its tongue and touches the food. The sense hairs at the tip of the tongue inform the bee as to whether the food is liquid or solid. If liquid, it is immediately eaten. But suppose it is candy containing an undesirable substance which the bee cannot detect until the candy is dissolved. At once a small current of saliva passes through the canal in the center of the tongue to the tip of this appendage. As soon as the saliva mixes with the food, a chemical or physical change is brought about, and this change perhaps liberates odors that were not smelled by the bee before the food was eaten. The dissolved food now passes through the deep groove on the underside of the tongue merely by capillary attraction. Since the organs of smell on the mouth-parts are almost in contact with this food as it passes from the underside to the upper side around the base of the tongue, the faintest odor imaginable from the undesirable substance could be detected by these organs.

This is why the writer claims that the bee has a combined sense of smell and taste, although it is easily seen that the sense of taste really plays no part in the reactions shown by bees while eating. To us sometimes a food, before being eaten, emits only a faint odor or no odor at all; but when we eat it, we perceive a pronounced odor. In such a case the odorous particles are not given off until the food is taken into the mouth and mixed with saliva. The same principle is certainly applicable when bees eat candies which contain undesirable substances emitting extremely weak odors. The liquid food now lying on the upper side of the tongue is raised to the mouth opening where it is sucked into the mouth by means of the pharynx acting as a powerful pump. The pharynx is able to do this because it is supplied with several large muscles.

The preceding closes the summary of the writer's published bulletins pertaining to the senses of smell, taste and touch. Since the writer is no longer connected with the office of bee-culture and perhaps will never study the senses of the honeybee any more, a few remarks about the uses of the sense of smell and about the other senses of this insect may not be out of place here.

Washington, D. C.

[Concluded in July number.]



## Beekeeping in Chile

BY M. C. RICHTER.

(Continued from May.)

**C**HOOSING a location in Chile is very much like choosing one in California. This is due to the similarity of both the honey-plants and the climate, the only difference being that the seasons are the reverse.

The writer, after examining bee territory over a large area, finally decided to locate in the Melipilla Valley at a point about 40 miles from Santiago. The location was half way between the foothills of the coast range and the river that flows through the valley. It was expected that here the bees would breed up in the spring on the mustard and wild radish of the pasture lands, which would put them in fine shape for the foothill bloom from vuillai and corontilla. Then, in summer, the bees could work chiefly on alfalfa and white clover. In the fall there would be considerable peppermint along the river that might yield a surplus. Altogether, under California conditions, it looked very much like a 300 colony location.

## THE CHILIAN BEE.

The location was there, to be sure, but how about the bees? As stated in the previous article, the bees are descended from two colonies out of 25 that were brought from Italy 70 years ago. The conditions following their introduction were most adverse. Wintering, for instance, was passed in hives having the equivalent in comb area of but six or seven Langstroth frames. Instead of having 30 or 40 pounds of honey as winter stores, they had perhaps less than 10. A winter loss of nearly 50 percent was the result. Furthermore, the swarming during this period was incessant, due principally to the very cramped condition of the colony. For the queen, after filling the equivalent of, say three Langstroth frames of worker-comb and two of drone, was soon compelled to leave with a swarm. Moreover, second and third swarms were nearly as frequent as prime swarms.

What was the effect then of these 70



FIG. 2.—ANOTHER VIEW OF SAN ANTONIO, FACING THE SAME DIRECTION BUT SHOWING WESTERN PORTION OF THE APIARY—(Note hanging swarm.)

years of severe treatment upon this Italian strain of bees? Had they degenerated? Would they swarm to such an extent that it would be most difficult to handle them along practical lines?

With these thoughts in mind, the writer, in the spring of 1912, secured an old fashioned Chilean apiary. The fall before it numbered 127 colonies, but now it had dwindled to 84. These were transferred to Langstroth hives and increased to 200. This apiary was called San Antonio (Figs. I and II). Later in the season a nearby apiary of 100 colonies was added, making 300 colonies in Langstroth frames.

Accurate records were kept of the 84 colonies transferred. After the summer's honey crop was harvested, six of these colonies were selected as possible breeders. There had been extracted from these six an average of 214 pounds of honey, and during the entire month of December their brood-nests contained 10 solid frames of brood. The one colony that was finally selected to breed from had maintained a 10-frame brood-nest from Nov. 18 to Jan.

15, and on Dec. 8 had as many as 14 frames of brood. This colony did not swarm, and, in addition to drawing out 27 sheets of foundation, produced 220 pounds of honey.

It is believed that the queen ancestors of this colony, for the 70 years past, did not have room during the height of the breeding season, to lay even half the eggs that this queen did.

The Italian bees of Chile have had a hard struggle for existence. In consequence, those that survive today possess great vigor and hardiness, perhaps to a greater degree than many of the so-called modern apiaries in the United States.

But the reader must not imagine that a Chilean apiary, transferred to movable frame hives, within one or two years can be made equal to an apiary of properly bred bees in this or any other country. There was but little uniformity in the production of the colonies of this apiary. It will take years of proper application of scientific breeding to overcome this. But "new blood" is not necessary. The above mentioned breeding colony, during her second and third seasons, maintained her position amongst the "first ten" of the 300 colonies in the apiary.

The Chilean strain of the Italian bee would be known in America as "leather colored." Bees from various parts of Chile were examined, and in every instance the workers were of uniform markings. The queens were, perhaps slightly more uniform than our leather colored. The drones, on the other hand, were not at all uniform. They were leather colored, or showed gradations from leather to black, as we find them in some of our colonies that we term pure Italians.

In disposition the Chilean bee is very mild. It is not at all necessary, even in large apiaries, to wear a veil before extracting time.

## SWARMING.

In apiary San Antonio the first season there were 49 swarms, the second, a poor season, only 8. This indicated that after all swarming was perhaps not a serious problem. Such, however,



FIG. 1.—APIARY SAN ANTONIO FACING WEST, AND SHOWING 150 COLONIES ON THE EAST SIDE OF THE BUILDINGS



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was not the case, for the third season showed a total of 140 swarms. On Oct. 9, for instance, 14 swarms issued, and from the 13th to the 18th of the same month five swarms issued daily. This was during foggy and drizzling weather. Strange to relate it was fully two months later before the main honey flow started; then 19 more swarms issued.

## LABOR.

The farm laborer in Chile receives in wages from 15 to 25 cents a day, according to the fluctuations in the rate of Chilean exchange. The laborer must board and house himself. The working day consists of 12 hours. In return, however, he receives from two to four acres of land to dwell upon.

What, then, was the necessity for a power extractor, when 20 cents would revolve the baskets for 12 hours. It is also no expense to keep the weeds down, in and about the apiary.

Felix Soto (Fig. III), the writer's best bee hand, learned beekeeping at 20 cents a day. This salary soon received a substantial raise. When Felix could stock nuclei, introduce queens, etc., he felt quite proud of being a 30-cent man. Today he has full charge of apiary San Antonio, and there is every reason to believe that he is succeeding. Apiary Marruecos (Fig. IV) another apiary of 300 colonies is now handled by a Japanese, A. Hatae, who is a very careful and thorough student of apiculture.

Although some of this cheap labor is good, there is a great deal that is bad. Most of the help cannot be trusted. The writer soon found that two good sized padlocks, one on either end of his solar wax extractor, were the only means of protection. In apiary San Antonio there were no less than 11 locks and keys necessary. With all these precautions, however, the writer was caught napping. One night he left just outside the extracting house a super full of dry brood combs, thinking that nothing in the world would



FIG. 4.—APIARY MARRUECOS CONTAINING 300 COLONIES ON CONCRETE BASIS BUT WITHOUT THEIR WIRE-SCREEN ALIGHTING "BOARDS"

disturb them before morning (no wax moths). A hungry dog, however, had in some manner broken through the fence surrounding the apiary and had eaten every bit of pollen in the combs!

## TRANSPORTATION DIFFICULTIES.

It frequently happens that the railroads in Chile lose considerable freight through theft. Honey is no exception in this respect. Of late it is transported largely in sealed cars. There is a case on record where a car of honey arrived at its destination with seal unbroken and some of the honey gone; that is, several of the barrels were empty. The cause of this shortage was soon detected. Evidently while the car was stalled in transit along some siding an enterprising Chilean, crawling beneath the car, with a good sized brace and bit, soon established direct communication between the bottom of a honey barrel and a receptacle previously provided. Doubtless this clever

scamp had several accomplices, each of which was similarly equipped. San Francisco, Calif.

## Get Ready for the Honey Flow

BY F. GREINER.

THERE is no better place for a beekeepers' meeting than the workshop of an extensive honey producer, though such a meeting might not be attended by any more than three or four interested persons. I would suggest that such meetings be arranged for by the beekeepers all over our land, and if possible frequently; they will be found very profitable at any time of the year. This by way of introduction of what I wish to say on the subject of "Preparedness." The reader need not fear that I will say anything on building battleships or increasing our standing army or anything of the sort. It is only along the line of getting ready for the 1916 campaign from the honey-producers' standpoint.

There were quite a few beekeepers last season who were caught with no dishes ready to catch the honey when the downpour came. Supers had to be emptied and refilled with sections. Comb foundation as well as sections had to be ordered hastily and shipped by express; same with receptacles for extracted honey. One of my neighbors, I observed, is sawing out and nailing up a lot of wide frame section holders just now. He has also a liberal supply of sections on hand, and has ordered sufficient comb foundation not to be caught again. Another friend was getting his supers ready, filling the sections with sheets of comb foundation. He had gotten along pretty well with his work.

We can never tell before hand how the honey season may turn out, and to be on the safe side we should always be well supplied with all and everything that can possibly be needed. Many do not order or supply themselves with shipping cases for comb honey or glass packages for the extracted until the crop is secured; but even this is not the best way. Such things do not de-



FIG. 3.—CHILIAN BEE HAND INSPECTING A COLONY OF BEES

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eriorate if they have to be held over. Do not wait until the rush is on before you order a supply. But a short time ago, I offered a near-by beekeeper his supply of sections at the price I paid, making 25,000, but he refused, saying he would wait until he saw the need. If I have to hold his sections until then, of course, he will have to pay 20 percent more for the goods. It will be to my advantage and I ought not to find fault. As to the real work now of getting hives and supers ready a few suggestions might not come amiss.

Brood-frames, shall we wire them? If so, how? I find that the deeper the frame the more necessary it is to strengthen the comb foundation to keep it from sagging. The painting of the upper portion of the foundation will probably solve the problem in the cheapest way. One or two horizontal wires for the Langstroth frame would help to keep the comb where it belongs. It would not in itself prevent sagging. Even four horizontal wires do not accomplish this end, even if put in ever so tightly stretched. In fact, a better comb will result when the wire is rather slack; when taut, buckling between the wires very often results. I am using a comb of  $4\frac{1}{4}$  inches of depth; here no sagging occurs with medium weight brood foundation, but I consider a horizontal wire of advantage, even then, in order to hold the foundation in the center of the frame. When frames are spaced  $1\frac{1}{2}$  inches or less from center to center it is much more necessary to have the foundation in the center of the frame than when the spacing is more, one or two wires will be sufficient to hold the foundation in the Langstroth frame where it belongs.

With  $1\frac{1}{2}$  inch spacing there is little more beeway, and we may be a little more careless, we may dispense with the wires and even use the loose hanging frame. To prevent sagging in deep frames, perpendicular wiring will do, as Dr. Miller's splints also. That kind of wiring will demand a stiff bottom-bar.

I prefer a flat top-bar with no groove. When a frame has to be used the second time the groove is a drawback.

We are now cleaning up our supers, scraping the section-holders and separators, the supers themselves, the inside and the edges. A great deal of propolis intermingled with particles of wax, which should be secured, is the result of this scraping. Different beekeepers use different tools for this work. I observed a friend the other day using an uncapping knife, the tip end ( $\frac{1}{8}$ ) of the blade being broken off. He said it worked nicely. A piece of steel  $2\frac{1}{2} \times 6$  inches, from a broken cross-cut saw serves my purpose well. I keep the edges filed square.

When all our supers and frames are cleaned we proceed and make up the sections and fill with full sheets of comb foundation. I have been looking around for some time to see if there was not a better method to do this work than my way of doing it, but nothing has impressed me very much so far. I do not use a machine for folding. I have never seen the need of one, as it does not facilitate the work. In fact, but little time can be gained at best by the use of a machine for that purpose. I easily fold 1000 per hour by just using my hands folding the sections into a square corner improvised by a piece of scantling clamped against the work-bench projecting above the bench the height of section when folded. The dovetailed ends are pushed together with the hands. I demonstrated the operation before a small gathering of beekeepers a few days ago to their entire satisfaction.

What shall be the shape and size of the comb foundation starters? I have to admit that I have no experience with the split section, which may be managed in such a manner as to avoid all the cutting of the foundation into little sheets. In other words, we may insert a long strip of the material into the four sections of the holder at one operation, and we need not use any artificial means to stick it (the foundation) fast to the wood. The pressure of

the sections when clamped together in the super holds it and makes a most perfect job, I suppose.

However, this style of sections has not met with favor generally, and is therefore not much used. I have been obliged to cut the foundation into sheets to fit the sections, and then fasten these little sheets in with some sort of a machine like the Daisy, or an improvement on this. I have not found it practical to use sheets of foundation to exactly fill or fit the section. There must be a little space left at the sides as well as at the bottom. At the bottom in particular there will have to be a space of  $\frac{1}{4}$  or  $\frac{3}{8}$  inch. The same space must be left, when bottom starters are used, between that and the sheet of foundation above it. Extra light section foundation is apt to sag more or less, and therefore allowance has to be made.

I am not sure that it would do very much harm if the sheet of foundation exactly fitted the section laterally, but it seems a little room is necessary to make the fastening by the Daisy or similarly working machines practical. It is practical to fasten sheets of foundation into sections by the hot wax method, using a pencil brush. In fact, this method most securely fastens the sheets, and none ever drop off while handling or transporting ready supers to the outyards; in this case sheets may be cut to exactly fit the sections laterally; but the method is slower and not popular with the majority of honey producers. I have concluded that it is most profitable to use as much comb foundation in sections as possible, although I took the opposite stand at one time.

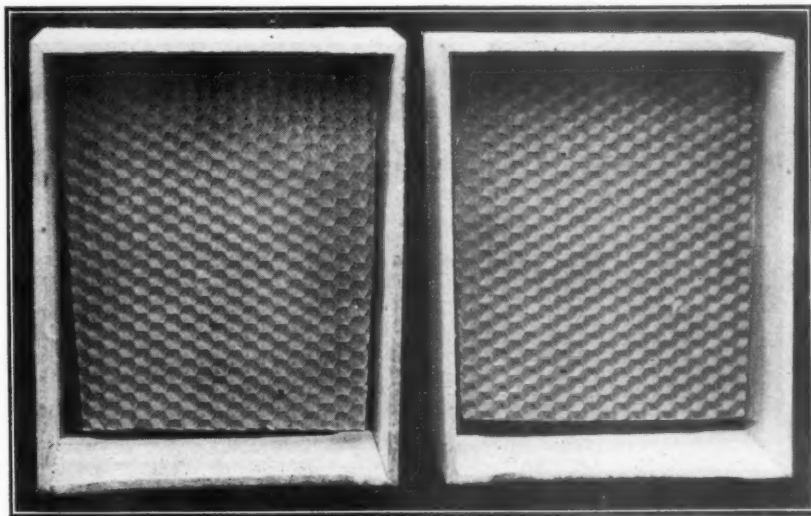
As said above, I want the sheets of foundation for my 4x5 sections in height  $\frac{1}{4}$  to  $\frac{3}{8}$  inch less than the inside dimensions of the section, which would be between  $4\frac{1}{4}$  and  $4\frac{1}{2}$  inches. In width I would have the sheet just  $3\frac{1}{4}$  inches wide at top and  $3\frac{1}{4}$  or  $3\frac{3}{8}$  wide at bottom. I have used them thus for years with good results. The bottom starter is not needed, and is of advantage only with the first supers when the bees occasionally begin their work here.

The sheets of foundation may very easily be cut the desired shape with almost no waste in a properly arranged cutting box, cutting 12 to 15 sheets at a time. The foundation should not be too warm when this work is done. I have worked in the cellar at times when the temperature was high outside. I also often do the work of handling the foundation and fastening the sheets into sections during the early morning hours in the summer time.

There are some who do not deem it best to put foundation into sections until wanted for use. I have not discovered that it makes any difference whether this is done just so or not. The principal thing is to have the supers ready when needed. The same rule is true when running for extracted honey; have all extracting supers ready and have plenty of them.

I find worker-comb in the extracting supers is more profitable and satisfactory than drone-comb.

Naples, N. Y.



F. GREINER USES FULL SHEETS WITH SUFFICIENT ROOM SO THE FOUNDATION WILL NOT "BUCKLE"



## No. 17.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

**D**URING the uncertain and backward spring which has just passed, the writer has taken a great deal of interest in trying to determine the value of the spring wild flowers to the honeybees. Aside from references to fruit-bloom, dandelion and the forest trees, such as maple and willow, the author has been able to find few statements of value in determining the importance of the spring blossoms. This season in our section the days when the bees could go to the field for forage have been few and far between. Brood rearing started early, and as a result many colonies were on short rations, and

the flowers are taken to the laboratory, there is an advantage in getting a picture of the plant in its natural environment.

In western Iowa the first wild flower to appear is a small white trillium, commonly called "wakerobin." During its period of bloom there were few times when the bees could go afield, but when they did go they sought these flowers eagerly. It was impossible to determine with any degree of success whether or not they were getting nectar. Since these spring flowers can never be of importance aside from the assistance they give the bees in early brood-rearing, and as pollen is as valuable at that period as is nectar, the matter is not important. No photograph was secured suitable for reproduction as conditions were not favorable.



FIG. 77.—BLOSSOM OF THE SIBERIAN SQUILL

many died from starvation where their owners did not take the trouble to insure sufficient stores. When they could get out they made the most of everything in sight, and the fact that bees were to be seen eagerly seeking the blossoms did not in itself establish the fact that they were getting much help from any particular plant.

At one time when a hive was opened there was considerable thin nectar which had evidently just been brought in. Yet as far as could be ascertained there was nothing available except the wild flower blossoms. Maple and willow had passed their blooming period with the weather so unfavorable that the bees could not fly. Box-elder or fruit blossoms had not yet opened. Possibly there was something within reach which the writer overlooked, but the indications were decidedly to the effect that the bees were finding these spring blossoms of much help in tiding them over an unfavorable period.

The photographs with this article were taken in the field, with one exception. A camera was carried along and notes taken on the blossoms which the bees were visiting and the picture made where the flower grew. While it is not possible to get as satisfactory pictures in some respects in this way, as where

### GARDEN FLOWERS.

In cities and towns such introduced species as crocus, scillas, etc., take the place of the wild flowers. The bees sought the blossoms of the Siberian squill, *Scilla siberica*, very eagerly and appeared to get some nectar although as with the others the matter was not definitely determined. This is an Old World flower which is very attractive when naturalized in the grass of parks or lawns. The blossoms are blue and appear some time in advance of the fruit trees. Figure 77 shows the blossoms about half natural size. Flower lovers will find this a very desirable plant to grow by hundreds or thousands. Aside from planting the bulbs it requires no care and it blooms in spring before time to mow the lawn, and the plant has died down again before it is necessary to clip the grass closely. It not only thrives without care in a stiff sod of a well-kept lawn, but adds a touch of beauty at a season when there is little enough that is attractive to be seen.

The crocus blossoms were out at the same time as the squill. This plant is a native of the Mediterranean region of Europe, but is widely cultivated in this country for its attractive flowers which range from white to purple in color. Figure 78 shows a honeybee searching for some honey treasure in a crocus blossom.

### THE BLOODROOT.

The bloodroot, *Sanguinaria canadensis*, is a common wild flower in the moist woods of all our northern States. It blooms early in April, and is eagerly sought by the bees for pollen. The plant is shown at Fig. 79.

### SPRING BEAUTY.

Figure 80 shows a bee gathering pollen from a blossom of spring beauty. These little flowers grow abundantly in the woods from Nova Scotia to Sas-



FIG. 78.—BEE VISITING A CROCUS BLOSSOM—THE CROCUS IS ONE OF THE FIRST FLOWERS TO BLOOM IN SPRING



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katchewan and Alaska, and southward to Georgia and Alabama. *Claytonia virginica* is one of the most widely scattered of American wild flowers and may be expected in woodlands almost anywhere except the extreme southern States. The bees have sought it very eagerly on the few days when they could fly during its early period of bloom. It was just at its best when fruit bloom opened and there was better pasturage to be had. All the bees which the writer observed at work on this plant seemed to be gathering pollen only.

VIRGINIA WATERLEAF.

The Virginia waterleaf, *Hydrophyllum virginicum*, does not bloom until after the fruit blossoms are gone and so has less competition for attention than some other plants that come into bloom during the same period. It blooms abundantly and grows luxuriantly in moist woods. The bees have been so eager for the blossoms of this plant in the writer's wild garden and in the surrounding woods for several years past, that he has come to regard it as quite a valuable honey-plant, although nowhere so listed as far as can be learned. Figure 81 shows the blossom and leaf of this plant while Fig. 82 shows masses of the plants in bloom. Apiaries in the vicinity of woodlands should find this plant of considerable value, judging from the writer's limited observation.

Atlantic, Iowa.

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## European Foulbrood

LETTER BY W. S. PANGBURN TO DR. MILLER.

**D**EAR DR. MILLER:—The method you used in treating European foulbrood in those two colonies in your article on "Foulbrood at Dr. Miller's," in American Bee Journal (raising the brood-nest and putting the

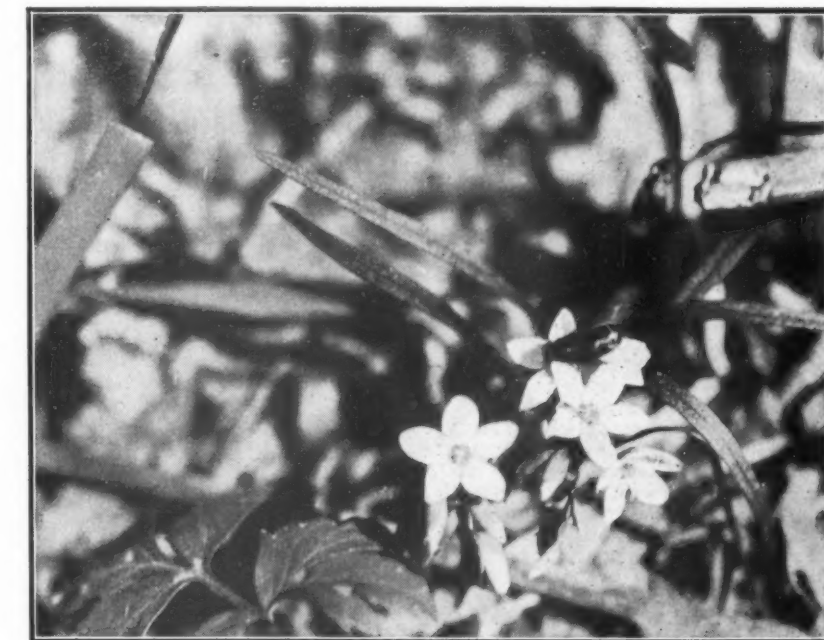


FIG. 80.—BEE GATHERING POLLEN FROM SPRING BEAUTIES

queen below on clean combs), was a failure with me with but few exceptions.

Did you ever try that again? If so, what success? I had no confidence in it from the very nature of the treatment, and it is the first thing I ever questioned from you. I have had the best success in caging the queen for 10 days, and then give a clean set of combs and raise the old brood-nest and use it for extracting. Of course, every one would not have the combs, but I think it safer to take away the old brood-nest whenever possible. It seems there is no European foulbrood after these combs are filled with honey and extracted, at least I



FIG. 81.—BLOSSOM OF VIRGINIA WATERLEAF



FIG. 79.—THE BLOODROOT BLOOMS EARLY! WHEN BOTH NECTAR AND POLLEN ARE SCARCE

have found it so. I have also found diseased combs can be put on top of clean colonies provided there is no larvæ in them to feed a queen-excluder and a clean body between the brood-nest and diseased body, get them cleaned up, filled with honey, and not transmit the disease below.

I have yet to find one single instance where I thought the queen was to blame for the disease, and I have done all I could to bring this about. Until I am shown differently I will retain the idea that in the vast majority of cases the nurse bees are to blame for the spread of the disease. I have some proof for this last statement that I will not explain here. I may be wrong, however; I have been before.

European foulbrood cost me something last summer because my bees were getting the disease from other

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sources faster than I could get rid of it, but I would not take a considerable sum for what I have learned.  
Center Junction, Iowa.

DR. MILLER'S ANSWER.

Your experiences are interesting. I do not remember that I tried again putting the diseased brood over excluder, leaving queen below.

You think it safer, in addition to caging the queen for 10 days, to give her clean combs, putting the old combs above an excluder. Undoubtedly. Yet those of us who do no extracting cannot take advantage of that plan. However, the proportion of failures with merely caging the queen is so small that it cannot make such a very great difference.

You also found diseased combs with no unsealed larvæ, put two stories above a healthy brood-nest, did no harm. Yet I suspect if you followed that up long enough you would now and then find an exception. For the spores are in that upper story, and while there is little probability that now and then one of those spores will be carried down and fed to a larva, the fact is that so long as there are any spores in any of the combs of a colony, no matter how far removed from the brood-nest, there is always a chance of infection. Indeed, we may go a good deal further than that. Take an apiary in which European foulbrood has been, and suppose it has been so cleaned up that not a spore can be found in any comb, hive, or super in the apiary, and that there is not a diseased colony within a thousand miles, yet there is a chance that the disease may break out at any time. For in cleaning up, the bees have carried out millions of spores, and they are scattered all over the ground in all directions about the apiary. There is a chance that one of those spores may become attached to the foot of a bee that lights on the ground, to be carried into the hive and by some means get into the breakfast of a baby bee, and there you are with European foulbrood on your hands again. There may be not one chance in a million, but all the same the chance is there.

Let us return to that plan of putting the diseased brood over excluder, leaving the queen below. It appears that I tried it in two cases and it was a success in both. You tried it, and it was generally a failure, although a success in a few cases. What does that prove? Not much of anything. It might be thought that it proves it is sometimes a success. Not at all. For sometimes bees clean up of themselves, and the treatment may have had nothing to do in the case. It might be thought that it proves it is sometimes a failure. Not at all. For it may be that the treatment was effective in every case that you tried, but the colonies treated were freshly infected from neighboring diseased colonies.

The moral of this is that, do the best we can, there are chances lurking in wait; but if we stop the feeding of brood for a certain time the chances are so favorable that we may go right on producing crops of honey without worry, fighting the disease whenever it shows itself again, just as we keep on raising good crops of garden stuff with-

out blubbering over the few weeds that may need the hoe.  
Marengo, Ill.

## Relation Between Aphid Infestation and Blight Infection

BY J. H. MERRILL, PH. D.

Assistant Entomologist, Kansas State Agricultural Experiment Station

FOR many years it has been customary to put all the blame upon the honeybee for spreading the various forms of blight, commonly called "blossom blight," "twig blight," "fire blight," "pear blight." It is known that this disease passes the winter in "hold-over" cankers on the limbs, which exude a gummy substance filled with blight bacteria, in the spring. It is also known that in order to damage twigs and blossoms the bacteria have to be carried by some agency from these cankers to other parts of the tree. As bees visit orchards when in bloom, they were considered to be the agency by which this blight is spread. For years this was accepted without any questioning.

However, it has been noticed that blight was present in young trees growing in nurseries which never had bloomed and which consequently offered no attraction to bees. It was also noticed that new growth which appeared on apple trees after blossoming time was blighted and there seemed to be no reason for blaming the bees as they did not frequent such twigs.

Experiments have been carried on of late to determine what other insects might play a part in spreading this disease. In order for blight to appear on a young tree which never has bloomed, or on new growth twigs, it is necessary for the bacteria to gain an entrance into them. How can this be more easily accomplished than by sucking insects crawling over the cankers,

later piercing the young growth with their beaks and thus introducing the bacteria into the twig?

Experiments are now being carried on by the entomologists of the Kansas Agricultural Experiment Station to show what relation exists between aphids and blight infection. At Cornell Experiment Station, it was definitely proved that sucking insects, such as the tarnished plant bug, can and do spread the blight.

In Kansas, observations on the relation of the abundance of aphids to the severity of blight infection have been carried on during the years 1913, 1914, and 1915. In the spring of 1913, large numbers of green aphids were noticed clustering on the unopened apple buds. Several orchardists were induced to spray their trees with a contact insecticide to control these aphids. Later, blight appeared quite generally in the apple orchards, but it was noticed that in those in which the aphids had been controlled very little of this disease was present. In 1914, there were very few aphids and very little blight. In the spring of 1915, the aphids again appeared in very large numbers, but this year more of the orchardists controlled the aphids by spraying their trees before blooming time with a contact insecticide. Blight appeared later in every orchard in which the aphids were not controlled, while there was practically no blight in those orchards which had been sprayed with a contact insecticide. Jonathan trees are very susceptible to blight injury, yet in a large block of these trees, part of which were treated for aphids and part untreated, blight was found only in the untreated portion.

These observations, which have been carried on for three years, show that there is a direct relation between the aphid infestation and blight infection. It is not the intention to claim here that aphids are the only carriers, as other sucking insects have also been



FIG. 82—VIRGINIA WATERLEAF IN AUTHOR'S WILD GARDEN



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found guilty. Improper care of pruning tools may also be responsible for its spread.

These results tend to show that entirely too much blame has been hitherto attached to the honeybee as an agent for spreading blight. The honeybee visited orchards which had been freed from aphids as well as those which had not, yet blight was found only in the portions infested with aphids. Further experiments are being carried on by the Entomology Department of the Kansas Agricultural Experiment Station to secure additional data on this subject.

Manhattan, Kan.

## Hives and Swarms

BY TARTLTON RAYMENT.

WITH the advent of spring the question of swarm control crops up with regularity; that the subject is still as fresh as the vernal greenness may be gauged from the prominence given to recent discussions. With your permission, Mr. Editor, and with all due apologies to those writers whose schemes we have unintentionally plagiarized, we shall endeavor to detail our treatment of colonies that insist on swarming.

Like many American apiarists, we have a predilection for the dimensions of the 8-frame hive, and time was when we experimented with the Heddon—or Bolton pattern, as it is known in Australia, but they are synonymous—also larger sizes of Langstroth hive. Experience, however, sent us back to our first love.

It is generally conceded by beekeepers of extended experience, that the swarming problem is greater with the 8-frame than with any other standard hive, yet we have found no material difference in the bees' behavior due to the house they live in. We have no set rule nor limit to the number of bodies and combs each colony shall occupy. It not infrequently happens, during a flow, that the colonies of an entire yard tenant hives of four stories; two bodies each containing 8 frames for brood, while the remaining couple have 7 frames each for supers. The bees actually use 30 frames. The use of supers even on the 10-frame size is universal. What, then, constitutes a large hive?

The whole subject of swarm control hinges mainly on the management of the apiarist, while the hive pattern is but a minor factor, bearing in mind, of course, our refusal to be tied down to any specific number of frames. Since the queen may utilize 16 or more frames for brood and eggs, there is little or no use for queen-excluders prior to the issue of the swarm.

It may be objected that brood in the honey frames is very inconvenient when extracting. In theory that is so; in practice, however, no difficulty presents itself with our system of working. The size of the hive, and the large number of frames constitute such an elastic whole, that we are never forced to extract from combs containing brood; they are simply moved to the sides of the super. On the next visit they are free from brood and full

of honey. Towards the termination of the honey season the super space is gradually withdrawn so that all incoming honey is stored—naturally, since it is the top of the hive—in the second brood-chamber as fast as the young bees emerge from the cells. This effectually precludes the future use of the combs for brood purposes. When severe winter threatens, what a mighty population is crammed into one story when the second brood-chamber is removed! Sometimes the bees cannot all get inside. In mild seasons, the brood-nest is placed over the body of empty combs and left to winter in that position.

Using the 8-frame bodies in the manner described reduces the swarming difficulties to the minimum, while in our every day work we have proved, to our satisfaction at least, that no frame or other hive stands out preeminently



as a regulator of the colonizing instinct. Management is the paramount influence.

With our system, which entails the clipping of all queens' wings, we await, free from all misgivings, the advent of the big swarms from the 4-story hives. When the expected happens, the parent hive is removed to one side, temporarily, while the swarm is provided with two bodies of dry comb. A queen-excluder covers the top. The two brood-chambers of the original stock are then carefully overhauled and all frames showing well developed queen-cells are grouped together in one body. The cell-less frames are placed over the excluder and the body containing the queen-cells completes the pile. Being on top the queen-cells are readily accessible, and needless to remark those completed in this manner cannot be surpassed. When all brood in the top stories has emerged and the ripe cells are disposed of the excluder is removed.

Should increase be desired the surplus brood-combs with ripe cells at-

tached may profitably be divided into nuclei. There is no loss of brood, as it cannot get chilled nor does it starve owing to a dearth of nurses; while the young bees seldom, if ever, desert the new stand. The supers from the parent colony may be extracted or used to entice other colonies to work "upstairs."

The practices here described are not put forth as original, but the plans outlined are practical, and, with us at least, have provided a constant and reliable method of handling bees when the objective is a crop of honey with its natural corollary, hard cash. We have endeavored to illustrate the position and arrangement of the combs in the accompanying drawing.

N. B.—Should queen-cells be permitted to remain in the super contiguous to the queen, the intention will be defeated by the reissue of the swarm. The provision whereby the queen is kept at a distance from the cells is a vital portion of the scheme.

Gippsland, Australia.

## Honey at the Panama Pacific Exposition

BY CHARLES DUFF STUART.

A CANVASS of the Panama Pacific International Exposition exhibits on Sept. 23, 1915, revealed some curious phases and facts concerning honey-growing in the United States as well as in foreign countries.

Of the 26 State buildings visited, only one, California, exhibited honey, and few exhibited other food products in their State buildings. Eight of these States, Arkansas, Illinois, Iowa, Maryland, Massachusetts, New Jersey, Oklahoma and Pennsylvania had no exhibits of honey, and manifested no interest in its production; while other States that produce honey extensively apparently did not consider the occupation seriously. Especially is this attitude true of Indiana and Texas.

The manager of the Indiana Building somewhat reluctantly explained that his State was giving very little official attention to the honey industry, probably for two reasons, because there were such quantities of wild honey, and because other pursuits were more profitable to the farmers. This gentleman had specialized in animal husbandry, yet the housing of the bee had never been considered by him, although Indiana is rich in bee-pasturage. Under propitious natural conditions it did seem a bit strenuous to set up an apiary when, according to our informant, one could go out and gather honey by the pound from a hollow tree in the back lot somewhere.

Texas, although second only to California as a producer of honey, made no exhibit at the Exposition, and had no literature on the subject. However, a delightful old Texas Colonel unofficially came to the rescue of the Lone Star State and assured us that honey-growing is one of its commercial industries; that from Beeville alone \$1,000,000 worth was shipped in 1914; that the apiaries are all large, containing from 250 to 1200 colonies each; that the State annually appro-



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priates \$10,000 to fight bee-diseases; that the crop is from 75 to 100 pounds to the colony and consists of both extracted and comb honey, while unripe honeys find their way to the vinegar cruet. He attributed the success of the bee-industry to the dry climate and the abundant honey-flora, on which he was equally well-informed.

In other States, judging from information gathered in our rounds, the bee is regarded more or less humorously—a nuisance tolerated only because of its ministrations to the sweet tooth of man. And in no State, not excepting California, was there a full appreciation of the commercial possibilities of honey-producing.

Kansas does not recognize honey as a commercial enterprise, though it is said to be an important by-product. Missouri claimed to produce some honey from wild flowers, alfalfa, sweet and white clover; North Dakota disposes of its honey locally when there is a surplus. Italian bees are kept and a white honey is generally produced. Wisconsin does not recognize honey-growing commercially.

Besides Texas, of the three other southern States represented by separate buildings, Mississippi, West Virginia and Virginia, only the latter exhibited honey, although interviews with the managers indicated unlimited and almost untouched possibilities in their sections, owing to the mild climate and the abundant pasturage.

A charming Mississippi hostess talked very entertainingly on bees and beekeeping in that State. At first it would seem that bees are kept solely for the wax that is needed in grafting pecan and orange orchards; but later she told of a poisonous yellow jasmine honey, for which there is no known antidote, and of a superior product called the melilotus honey, produced in the central part of the State. Some one indiscreetly remarked that he had never seen the honey advertised, to which the lady indignantly replied, "We don't have to advertise ouah honey. We haven't enough for ouah-selves."

In 48 counties out of 55 recently visited by a State official in West Virginia, nearly every farmer kept a few bees. No literature on beekeeping was obtainable in their building. Buckwheat is said to be the important source of honey, a dark product with a peculiar odor and strong flavor, delicious to the native but for which the outsider must cultivate a taste.

Louisiana had no separate building, but her extensive exhibit of resources in the Agricultural Building contained no honey, although we were told that much is produced from the tupelo gum, sweet gum and Japanese clover.

## AGRICULTURAL BUILDING.

Of the honey exhibited in that building, the famous 12 varieties of a leading New York dealer were the most fascinating; not that the honey was whiter or more attractively displayed, but who could gaze on such labels as locust, raspberry, milkweed, white clover, buckwheat, alfalfa, dandelion, heartsease, sumac, goldenrod, fruit blossom and basswood, and not be consumed with a desire to sample the contents of the jars?

Ohio had a large show-case filled with comb and extracted honey, also a considerable amount of wax, and the Idaho and Virginia booths contained exhibits of extracted and comb honey from private exhibitors. In Idaho alfalfa and white clover furnish the nectar, and in Virginia, alfalfa and crimson (not red) clover are the principal honey plants. Montana had a fine display of white sage and alfalfa honey.

The honey in the Nevada booth while of good quality and tastefully arranged, did not fairly represent the importance of an industry which though still in its infancy, yields annually many tons. Both white and sweet clover are plentiful in Nevada, but the principal pasturage is alfalfa, which, in the higher altitude, furnishes a fine grade of water-white honey.

## HORTICULTURAL BUILDING.

Both Washington and Oregon had a modest exhibit in that building, while Utah's was somewhat more pretentious. The latter display occupied a separate show case, and their comb honey was displayed in attractive cartons appropriately decorated, in the sides of which round holes were cut to permit of inspection.

## CALIFORNIA STATE BUILDING.

There seem to be only two sections in California so far as honey-producing is concerned, north of Tehachapi and south of Tehachapi, the latter claiming quality and climate and the former claiming quantity and a sure crop.

Los Angeles, San Diego, and Ventura counties and Imperial Valley combined in one splendid exhibit representative of southern California honey-growers. The northern counties of Sacramento Valley had an equally imposing exhibit characteristic of the honey industry in that section of the State.

Monterey had the best exhibit of any single county in the California Building, and is eager to secure more beemen for its fine locations which they claim will accommodate 1000 apiaries. The pasturage is white sage and wild flowers, and their exhibit included also honey made from manzanita, a dark amber, and honey from button sage and cascara.

## HONEY EXHIBITS IN FOREIGN COUNTRIES.

Of the 18 foreign buildings visited, only four, Canada, Australia, New Zealand and Siam included honey in their exhibits.

Honey in Australia is produced mainly from the many varieties of the eucalyptus or gum tree, of which the red gum is said to produce the best quality. Sample jars were distributed to the public, that to the unaccustomed palate left a peculiar aftertaste, like a dose of medicine disguised in honey. A large upright show case was devoted exclusively to both comb and extracted honey.

A clear white extracted honey is made from white clover in Ontario, Canada.

In New Zealand the vegetation and general conditions are much the same as in Australia. The honey runs from dark to a very light amber, almost white, the former being produced from a wild plant called catsear, and the lat-

ter from white clover.

The small, ornate Siam Building contained two tiny bottles of very dark honey and a few cakes of wax.

Cuba's exhibit in the Food Products Building contained some honey of a light color and somewhat muddy in appearance.

Argentina was represented by a small exhibit of extracted light-colored honey said to be produced from alfalfa, and some wax.

Though there is excellent bee-pasturage in the Philippines, it is said that the climate is too hot for any except the native wild bee. Several attempts have been made to domesticate the bee, but colonies imported from Australia and Italy soon die.

Unlike our States, that consider the honey industry important as it may be estimated commercially in dollars and cents, European countries accept the bee as matter-of-factly as the family cow or hen. It has its own place in their scheme of domestic economy.

"Everybody keeps bees in Sweden," said the hostess of that pavillion; but there was no special information or literature to be had.

A young man in the Netherlands Building, after an exhaustive search through the literature of their information bureau, found mention of honey wine and honey brandy, and a honey plant called heyde, a low-growing shrub found in sandy regions. One naturally concluded that nectar from heyde must be of an intoxicating character, but this impression was later corrected. We found that both comb and extracted honey is produced, and the black German bee is kept. The Indian colonies, like the Philippine Islands, are too warm for the production of honey.

The coffee-tree of Guatemala has a small white cluster flower, said to contain much nectar. There being 200,000 acres in coffee plantations in that country, honey growing should become a great industry provided the climate is favorable.

Apparently the Japanese are going into honey-growing with their characteristic energy and thoroughness. The government is investigating methods and equipment for getting the best results. They use the American hives and only Italian bees. Through the interpreter we learned that the rape plant is the principal source of commercial honey in Japan, though there is other and greatly diversified pasturage. "It is not like here in California, here a flower and there a flower, said he, 'but in Japan everywhere flowers, all kinds.'" The industry is still in its infancy. There was no exhibit. They produce both comb and extracted honey. At present honey is imported to Japan from both Italy and France. As in other lines, Japan is passing on to China the knowledge gained in apiculture. General conditions are much the same in the two countries.

## MISCELLANEOUS EXHIBITS.

The live-bee exhibit in the Education Building attracted much attention. There were three observation hives housing respectively Carniolans, Caucasians and Italians. The most unique feature was the wooden chutes or passage-ways that projected through the outside wall of the building and fur-

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nished the means by which the bees trafficked in the nectar from the myriads of flowers that decked the Exposition grounds. The passage-ways were sufficiently high not to interfere with the passing crowds on the outside, and on the inside of the building at a point near the hives, they were provided with a tiny pane of glass in order that the comings and goings of the bees might be observed.

Another observation hive was stationed in the A. I. Root exhibit in the Food Product Building. This was mounted on a pedestal and was continually surrounded by an interested group endeavoring to locate the queen-bee.

In the same booth, under the auspices of the California State Beekeep-

ers' Association, were shown some curios in a glass case, labeled, "Bees in Literature and Art." These were a loan from the valuable bee library of Mr. M. C. Richter, our western authority on apiculture.

But most interesting to the impecunious beginner in apiculture, were the five maps of the United States Forest Service on the walls of the booth. Each map showed a particular forest in California where "Special Use" permits for apiaries had been granted, and the exact location of such permits issued by the Forest Service. An explanatory chart told how interested persons might proceed to take up (at a nominal rental) an apiary site upon the government forest reserves.

Los Gatos, Calif.

## GENERAL INFORMATION.

Amherst is desirably situated in the Connecticut Valley. In May and June the scenery is at its height in beauty, hence this season offers a pleasant opportunity for the course at the Agricultural College. Besides the work in beekeeping, ample opportunities will be afforded to visit the other parts of the Massachusetts Agricultural College as well as to visit Amherst College. Excursions will be taken as opportunity and the work may demand. It is usually customary to make a trip to some practical beeyard and queen-rearing establishment. Students returning from this course should be well equipped to handle bees on their own account.

**Soaking Old Combs in Water.**—On page 189 of 1914, you say "keep old combs covered with water to preserve from moths until they have time to render them." I have had sorry experience with this plan. The mass fermented and the wax was rendered a dark greenish-brown color, and gained an odor which is positively vile. This may not occur if there is absolutely no honey to cause fermentation. I am not sure there will be no fermentation, even with dry combs, because of the cocoons and other refuse.

Perhaps a word of caution to your readers along this line would be helpful.

E. G. CARR.

New Egypt, N. J.

Mr. Carr is right, and the advice given did not contemplate keeping the combs in water beyond a few days, in summer. In cold weather or fall they may be immersed for several weeks without injury, and we have found the color even improved and the quantity of wax secured is increased because of the water-soaking of the residues. The wax separates better in such a case. But Mr. Carr's warning is good.

**Bees at the Michigan State Fair.**—The Michigan State Fair authorities have adopted the recommendations of the State Association of beekeepers concerning regulations and premiums at the Fair. The list of premiums now offered amounts to \$575, instead of \$132 as formerly. Full information may be secured by addressing E. B. Tyrrell, Superintendent of Apiary Department, 20 Grand Avenue, W., Detroit, Mich.

**An Error.**—In our last number we made the advertisement of Mr. Kenneth Hawkins read "2400 more queens" while it should have read "24 or more queens." Not even a combine of queen breeders would think of offering prices on such a batch of queens at one time.

**Report on the Wintering of Bees in Ontario.**—Up to the present date, April 20, about 700 persons keeping 20,000 colonies of bees have reported a winter loss of about 13 percent. The loss was largely due to starving, owing partly to an insufficient supply of stores on account of the high price of sugar and partly to a mild spell in January,

## MISCELLANEOUS



## NEWS ITEMS

**Save the Waste Paper.**—This is the recommendation of A. I. Root, in *Gleanings* for April 15. Although a matter of this kind is hardly in the line of beekeeping, we feel it to be wise enough to repeat it. America is a country of wastefulness. It is time we should learn better.

A few days ago, we received a letter from the publisher of the Spanish edition of the "Hive and Honeybee," Mr. Gustavo Gili, of Barcelona, Spain. He stated that paper for book printing was getting so high priced that he wished to have American quotations. In compliance, we wrote to two firms asking them to send Mr. Gili their wholesale prices on book paper. The replies were that they could barely supply the home demand and that it was of no use to make offers to foreign purchasers.

We waste paper. In the average American city, the streets are often littered with unseemly, dirty, flying newspapers, wrapping papers, cardboard, etc. We may see the day when we will wish we had been less wasteful.

**Spring Beekeeping School.**—The most ideal time in the year to study bees is May and June when the colonies are at their maximum in strength and activities. The bees are easily handled. The student quickly gains a full acquaintance with the majority of the manipulations necessary to beekeeping. At this time of the year once in three years an intensive course in beekeeping is offered at the Massachusetts Agricultural College, primarily for a limited number of practical beekeepers. This year particularly the course is being conducted by an especially strong staff of the college faculty, and will occupy seven hours daily for two weeks at Amherst, beginning May 31 and ending June 14, Saturdays being devoted to excursions. The course comprises lectures, laboratory practicums, work in the bee-yard and field excursions. It is under the direction of Dr. Burton N. Gates.

The college maintains a practical

bee-yard of about 50 colonies as well as outyards, and a well appointed bee-house and laboratories, besides a wax working laboratory, library, and beekeeping museum. These exceptional facilities are offered the student in this subject.

### COURSES.

1. *Practical Beekeeping*—Lectures: laboratory practice in the general work of the beekeeper; beekeeping equipment, practices in the preparation of materials, location of the apiary; commencing with bees, handling of bees, practice in beeyard procedure; spring manipulation; fall preparation, wintering; comb and extracted honey production; bee diseases and their treatment, apiary sanitation; making increase; elements of queen-rearing, etc.

Burton N. Gates, Associate Professor of Beekeeping; John L. Byard, Superintendent of the Apiary; Gladstone H. Cale, Laboratory and Apiary Assistant.

2. *Life of the Honeybee*—Lectures: Henry T. Fernald, Professor of Entomology.

3. *Special Problems of the Beekeeper*—Lectures: demonstrations in requeening, the races of bees, the introduction of queens; swarming and handling swarms; comb honey production, enemies of bees.

James B. Paige, Professor of Veterinary Science.

4. *Crops Foraged by Bees*—Lectures: field excursions.

William P. Brooks, Director of the Experiment Station.

5. *The relation of bees to the pollination of plants, including coloration, odor, nectar secretion*—Lectures: laboratory work in blossom structure and dissection.

A. Vincent Osmun, Associate Professor of Botany.

6. *Bees in Horticultural Practices*—Lectures: field work in the utilization of bees in fruit production, market gardening, cranberry culture and greenhouse cucumber growing; beekeeping as affected by spraying practices.

Walter W. Chenoweth, Associate Professor of Pomology.



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which caused the bees to rear brood and draw heavily on their stores. The few warm days early in April gave the bees a cleansing flight, and their general condition now is reported as very good. Few really heavy losses have been reported from extensive beekeepers. More report forms than ever have been returned marked "Not a beekeeper." These are mostly from the smaller beekeepers, who are finding that specialization pays best. It is an indication that the industry is getting on a better business basis from year to year.

Clover prospects seem very good throughout the Province. The latter part of the season of 1915 being wet gave the new seeding an excellent start, and the scarcity of farm labor has increased the acreage seeded down. On the whole, present indications are for a good season, and beekeepers are even more optimistic than usual.

MORLEY PETTIT,  
*Provincial Apiarist.*

**Obituary.**—Dr. J. J. Brinkerhoff, aged 47 years, a physician and beekeeper of Minooka, Ill., died at Joliet, Ill., April 4, following an operation on his throat. Dr. Brinkerhoff was a scientific beekeeper, and because poor health kept him from his practice much, he became interested in bees. He did his share to get the foulbrood law in Illinois, and worked early and late in helping rid his community of foulbrood, often giving his services gratis to beekeeping neighbors who needed help in cleaning up. He was well known at the Illinois and Chicago-Northwestern meets and always a booster. Beside his wife he leaves four children, John 17, Eva 16, Rachael 9, and Gertrude 7 years old. His beekeeping friends extend their sympathies to them.

KENNETH HAWKINS.

**Death of C. C. Clemons.**—It is with regret that we chronicle the death of Mr. C. C. Clemons, of Kansas City, Mo. Personal acquaintance with Mr. Clemons had given us the highest opinion of him both as a man of kind and considerate personality as well as a business man of integrity and honesty.

Mr. Clemons, who was 76 years old at the time of his death on May 4, had been engaged in the commission business for many years, and in that time made the handling of honey one of his specialties. He also handled bee supplies to some extent, working under the name of the C. C. Clemons Bee Supply Company. So far as we are informed, this company will continue in business, his associates assuming charge.

**Minnesota to the Front Again.**—The division of bee-culture of the University of Minnesota, under the management of Prof. Francis Jager, helped by L. V. France, is taking steps to secure a complete survey of beekeeping conditions in the State by sending to each beekeeper cards with blanks asking him to reply to questions and join in the effort and become observer for his special locality.

The ground to be covered includes

the success with different methods of wintering, information concerning the extent of spring dwindling, pollen and honey plants, honey flows and best locations for honey production. The distribution of the beekeepers and the extent of bee-diseases will also be looked into. Such a survey will be invaluable to the beekeeping interests of any State.

Queens are bred in the State Farm apiary and offered to the beekeepers of the State at 50 cents each, no one being entitled to more than three at this price. If good queens are produced, as aimed, this will give opportunity for greatly improved breeding.

Attention is called to the fact that the Minnesota State Fair is offering \$1168 in premiums, the largest amount, by far, of any State in the Union.

The Fair secretary, in his 1915 report says: "The exhibit of honey and bees in the Apiary Building attracted more than usual interest this year. The fact that one Minnesota beekeeper brought 30,000 pounds of honey (15 tons) to the Fair, worth \$4500, seems almost unbelievable; nevertheless it is a fact. A large part of this honey was used in extracting and bottling demonstrations during the Fair. It is said that the 15 tons was only about one-half of the owner's crop for the year."

Minnesota is at the front, surely.

**British America—Regulations of Bee Importations.**—Owing to the existence of foulbrood, the Province of British Columbia has passed the following order:

"Notice is hereby given in conformity with Section 12, of the Foulbrood Bees Act, 1911, Chap. 18, that any or all bees imported with their hives into the Province of British Columbia shall be quarantined at the point of entry into said Province, or at such other place as may hereafter be appointed for a period of not more than nine months, and if such bees are found to be infected they shall be destroyed; and to further recommend that bees imported by the pound, in packages, or crates, may be admitted into the Province of British Columbia upon production of a satisfactory certificate, from a State or Provincial Inspector, of freedom from foulbrood at point of origin."

Shippers of bees and queens will need to comply with the above requirements. The need of inspectors of bees in every State is becoming more and more apparent.

**Inspection Warning.**—When inspecting an apiary for disease, one is apt to look for it in the weakest colonies. This is correct. But if the disease is in the incipient form, it may have been gained from the bees of some neighbor, by robbing. In that case it will be found most likely in the strongest colonies. Therefore, after examining the weak ones it is well to go to the strongest for possible initial stages.

AN INSPECTOR.

**Bexar Co., Tex., Field Meet.**—The beekeepers of south Texas will hold their annual field meet and and basket pic-

nic on June 18, in San Antonio. The meet will be held in the apiary of Mr. E. G. Le Sturgeon and the Bexar County Beekeepers' Association will be host, having invited the attendance of the other county associations. State Entomologist F. B. Paddock, Prof. Louis H. Scholl, and other well known beekeepers of Texas will be on the program. Demonstrations in handling bees and an object lesson in foulbrood treatment will be made for the benefit of visitors. A large number of beekeepers and their families are expected.

**Summer Course in Ontario.**—A summer course in beekeeping is being arranged at the Ontario Agricultural College for the week of June 12. It will consist of apiary demonstrations and practice. Day sessions will be conducted in the apiary as far as possible, and illustrated evening lectures will be given.

Such special subjects as Wintering, Swarm Control, Bee Diseases, Queen Rearing, Requeening, and the like will be taken up in turn, and demonstrated by means of the bees and appliances in the apiary. Instruction will be given by the Provincial Apiarist, assisted by prominent beekeepers.

Mr. Frank C. Pellett, State Apiary Inspector of Iowa, has consented to spend a few days of the week in attendance and assist in the instruction. He will also give illustrated evening lectures on "Beekeeping in the Mississippi Valley," and on "Our Backdoor Neighbor." The latter subject deals particularly with the economic importance of wild life, including bees and insects.

The Wellington County Beekeepers' Association is arranging to hold a field day at the college during the week of the summer course.

MORLEY PETTIT.

**New Brunswick Meeting.**—The New Brunswick Beekeepers' Association met in annual convention at Fredericton March 2. While the attendance was not large those who were present made up in enthusiasm for what they lacked in numbers.

Mr. L. T. Floyd presided. The president's address was most interesting and optimistic in tone. It spoke of good crops of honey, good markets, and a greatly increased demand for the products of the bee.

The secretary-treasurer reported a membership of 53. He also reported that several hundred dollars worth of supplies had been purchased through the association by its members at a very considerable saving to themselves.

The Provincial Apiarist, Mr. H. B. Durost, told of greatly increased interest in bees. Many inquiries for bees and for information for their care were being received from all parts of the Province.

Mr. F. W. L. Sladen, Dominion Apiarist, delivered a most interesting and helpful address on general beekeeping practice. The many questions with which the speaker was plied and the lengthy discussion which followed the address showed the amount of interest aroused.

The election of officers resulted as



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follows: President, Mr. L. T. Floyd, Central Norton; 1st Vice-President, Mr. David Hiscoe, Frederickton; 2d Vice-President, Mr. G. S. Peabody, Woodstock; Secretary-Treasurer, Mr.

H. B. Durost, Woodstock.

The question of handling supplies again this year was left for the Board of Directors to settle.

H. B. DUROST, Sec.-Treas.

## DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to  
DR. C. C. MILLER, MARENGO, IL.  
He does NOT answer bee-keeping questions by mail.

### Average Return Per Colony—Location

1. What amount of money can one make out of a colony of bees each year?
2. I would also like to have your opinion as to a good location in Michigan

MICHIGAN.

ANSWERS.—1. There is a strong temptation to answer by saying, "I don't know," but I suppose the roughest kind of a guess would suit you better than that. You see there are so many factors to be considered: the season, the kind of bees, the locality, and the man, or at least part of them. Dr. E. F. Phillips estimates the average annual crop at 25 to 30 sections, or 40 to 60 pounds of extracted honey. Some probably don't do half as well as that, while there are beekeepers who would not feel satisfied if they could not double it. As you are among those who have literature upon the subject, I should guess that you would do better than the average, perhaps averaging 40 sections, and that might bring you \$4.00, \$6.00, or \$8.00, according as you would wholesale it at a low figure or retail it by the section at a high figure.

2. Most of the best locations in Michigan are already fully occupied, which is as much as saying they are no locations at all; the most important item in choosing a location being to find one where there are few or no beekeepers. From what little I know about it, I should guess you would do well to do a little prospecting in the northern part, perhaps in the burnt districts where fireweed and raspberries abound.

### Granulation of Comb Honey

I am sending you under separate cover two small pieces of comb honey marked sample "A" and "B." Both of these samples are cut from section comb honey, which was represented to be white clover, and both, as you will note, are of distinctly different flavor. Sample "A" is from a New York State producer, and considerable honey of this flavor was included in a shipment of white clover and basswood. All sections of the honey similar to sample "A" showed a remarkable tendency to granulate; in fact, it granulated last fall, about October or November, while the basswood comb in this shipment is still in good condition.

Would you kindly give your opinion as to the source each of these samples have been gathered from. Also state as far as you know which of the eastern and western comb honeys are the most apt to granulate, and if there would be any way of telling from looking at a comb of honey whether it was of a kind that would granulate quickly?

I have read your frequent remarks about keeping comb honey at about 80 degrees Fahr., and at a uniform temperature, but isn't it a fact that some sorts of comb honey will granulate no matter how much care you take of it? What do you think is the cause of this? Is there something in one honey not found in another, which will cause one to granulate quickly and the other to keep liquid a long time? Would a chemical analysis of the comb honey reveal whether it was of a quick granulating kind?

Have you ever kept comb honey in a super over a colony of bees; if so, what about the tendency of comb honey kept in this man-

ner to granulate?

NEW YORK.

ANSWER.—It was a surprise to find these two samples of comb honey in such excellent condition. A little square of honey was wrapped in tissue paper, then in writing paper, then in manilla paper, and put into a common pasteboard box, the whole wrapped in manilla paper. There was scarcely any leakage, and if honey would always come through in such good condition the problem of sending it by parcel post would be solved.

I am not an expert at judging honey, but my guess would be that sample "A" was white-clover honey. Sample "B" might be a mixture of white clover and something else, or it might be without any white clover, and from some source which I don't know. It would, however, probably pass muster generally as white clover. It is probably not very often that you will find a section of honey that is *entirely* of one kind of honey. At a time when white clover is doing its best, a little search will show you some bees at work on other flowers than white clover.

I don't think there is any way by which you can tell by looking whether a piece of comb honey will granulate readily or not. Of course, if you know that one section is of alfalfa and another of sage, you will know that one will granulate more readily than the other; but that is hardly what you mean. Alfalfa granulates very readily, and sage very slowly. I don't know why. Also, a sample of honey will sometimes granulate more readily than another of the same kind of honey. I don't know what makes the difference, and I doubt whether chemical analysis would show which one would granulate first. I have an idea that a sample that is thoroughly ripened will be more slow about granulating. At any rate I've had white-clover honey keep three years or more without granulating, and I know no reason for it except that it was kept in an attic where it got very hot in summer.

I never kept a super of honey over a colony of bees in winter; but I have, of course, had frames of it in the brood-chamber, where it keeps well.

### Moldy Comb

When I removed my bees from the cellar this spring several of the combs were covered with a light green mold. This comb was put into the frames last summer in comb foundation. Will the bees fix this moldy comb all right or will it have to be replaced with comb foundation?

MICHIGAN.

ANSWER.—The bees will clean them up all right. You will no doubt find that in the brood-nest itself there will be no mold, and as the brood-nest expands the bees will clean up each cell before using it. Some colonies may die in winter, and you may think of using for swarms the moldy combs

left. That would not be wise, for the bees of a swarm are more particular about their combs than are the bees of an established colony. But you can have such combs cleaned up in advance. Fill them into a hive-body and set this hive-body under the hive of a strong colony. The combs will be nicely cleaned up by the time you will want them for a swarm.

### Bees Thin Honey

1. Do bees store water in combs?
2. Do they work over their honey, thinning it with water in the spring? VERMONT.

ANSWERS.—1. I don't think they do,  
2. I think they do.

### A Beginner

1. How can I save a swarm of bees after they have clustered in a 45 or 50 foot tree?
2. Is the honey ripe when it is all sealed, or how long should it stay in the super after sealed until it is ready to be taken out and how is the best way to get it?
3. Would a honey-board be a great help?
4. Can a person smoke bees too much?
5. Would it be any advantage or disadvantage if the super was glass on each side except one inch all around the out edge? Would it be too light or too warm for them if shaded well?
6. Should bees be transferred when apple trees are in bloom?
7. How can I keep my bees from swarming if there is no entrance guard on the hive?
8. I caught a swarm of bees last spring. Will they swarm this year, and did they get the old or young queen? KENTUCKY.

ANSWERS.—1. Climb up and get the swarm in a basket; then climb down with it or lower it with a rope. Likely you can't do that if it is out at the tip-end of a limb. Maybe you can throw a stone over the limb, with a tight cord tied to the stone, so that the stone will bring down to you the end of the cord. Then you can tie a rope to the end of the light cord and pull it down. Then, the rope being across the limb, you having hold of both ends of the rope, shake the limb like sixty. If your hive is sitting on the ground where the bees fall, maybe they'll enter it. Now, seeing it's you, I'll tell you something a good deal easier. Cut off the queen's wings on one side, and then if the swarm settles on a high tree, don't bother your head about it, but find and cage the queen; set the old hive off its stand, and set the empty hive in its place, with the caged queen at the entrance; then when the swarm comes down, as it surely will, free the queen after the swarm begins to enter the hive.

2. There may be rare times when honey is sealed before it is ripe enough, but you are safe in counting that it is ready to take off when it is sealed. I can't give you special instructions about taking it off without knowing in just what shape it is on the hive, the kind of super, etc.

3. By a honey-board I suppose you mean a queen-excluder. Nearly all who produce extracted honey consider an excluder important; for section honey it is not needed if you have your sections filled with worker-comb foundation.

4. Yes, indeed. Don't smoke them more than enough to keep them from flying at you.

5. It would be a needless expense, and I don't think the bees would like it so well.

6. There is perhaps no better time if you use the old-fashioned way of cutting out the combs of brood and fastening them in the frames. Better wait until the bees swarm; hive the swarm and set it in place of the old hive, with the old hive close beside it; then three weeks later cut out the combs.

One way is to kill the old queen when you find queen-cells in the hive, and when they

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are sealed destroy all the cells but one.

8. They are likely to swarm if the season is good. If the swarm was a first swarm, the queen is old; if an afterswarm she is less than a month old.

## Queen Eggs Sent by Mail—Making Queen Lay in Prepared Cups

1. Why can't the eggs of a queen be sent by mail in a piece of comb?  
2. What is the Swarthmore plan of getting the queen to lay in prepared cell-cups? See *Beekeepers Review*, page 59, 1916, 4th paragraph.

ANSWERS.—1. I am not sure about it, but I think in Europe they do send them by mail. Of course, the distance sent makes a difference, and like enough the age of the eggs. The way is open for you to do some experimenting.

2. In the paragraph referred to, Jay Smith does not mention the Swarthmore plan; but does object that "taking a larva up with the needle, giving it a punch in the stomach, a gouge in the ribs, and taking it out into the sunlight and hot, dry air," may not "make quite such a vigorous, long-lived queen for having received such a heroic massage." Mr. Smith's ideas are worth considering. I do not now recall, if I ever knew, just what was the Swarthmore plan to get the queen to lay in prepared cells. For rearing my own queens, I have not for years done any transferring; preferring to use eggs and larvae, as described in "Fifty Years Among the Bees," leaving the bees to do all the manipulation themselves.

## Italian vs. Hybrid Stock

1. I have what I suppose are hybrids, and there are other hybrids around me. Would it be profitable for me to invest in a pure Italian queen, or would there be no gain by it on account of the hybrid drones?  
2. I have read of the Italian red clover strain as valuable. Have you this strain, and how much would you charge for a queen?

ANSWERS.—1. Yes, it would be well worth while to get a pure Italian queen. Just how much gain there would be depends upon the quality of your present stock. The poorer they are the more the gain. Even if your young queens meet hybrid drones, you would have more Italian than black blood, and by rearing your young queens constantly from a pure queen you would be getting in more and more Italian blood, and soon some of your stock would be pure.

2. I don't personally sell queens, although there is a company that sells queens of my stock. I have no red clover stock, and if any one has queens of such stock you will be likely to find them advertised in the *American Bee Journal*. There have been bees that would work more than others on red clover, but the characteristic has not been well fixed, and the strain has generally run out. Some, indeed, insist there is no such thing as a red-clover strain.

## Foulbrood

It is claimed that if a colony has foulbrood and the queen is taken away or killed and the colony left ten days, then requeened with a good Italian queen, it will in most cases cure the foulbrood. If a colony has died with foulbrood, and after a few days or months I throw a strong swarm into that hive, will they clean it up and will the foulbrood be cured? Or if I take a hive that has foulbrood and kill the queen, and after ten days I take a swarm and give them with this colony, will that cure the foulbrood and will they clean it up?

ANSWER.—If you are talking about American foulbrood, then you cannot safely do any of the things you suggest, unless it be to

use again a *hive*, although some object even to that. But the combs cannot be used again safely. But in the case of European foulbrood, either of the plans you mention will generally result in a cure if the queen given be a vigorous Italian.

## Cause of Wingless Bees

1. I have a hive of bees that has a lot of wingless bees; their wings seem to dry and shrivel up. They seem to be healthy otherwise. What is the cause of it?  
2. Is a drone reared from fertile or unfertile egg?

ANSWERS.—1. Once in a while a young bee emerges with defective wings, for which there seems to be no special reason unless it be lack of vigor. Often it is caused by the bee-moth. Exchanging the queen for one of vigorous Italian stock, and then keeping strong colonies will likely remedy the trouble.

2. A drone proceeds from an unimpregnated egg.

## How to Get Bees to Empty Old Combs

I have often read your answers to the question "How to transfer bees from old box-hives?" and have frequently used your method, but when the bees are all out of the old box-hive there is generally some honey left in the old crooked combs. How can I get the bees to remove this honey from the combs without permitting the bees from any other hive to get a taste of it?

ANSWER.—Your problem is not the easiest, if you want the combs to remain unbroken in the old hive. The only way I know of in that case is to have the old hive either under or over the new one, with all cracks closed, so no bee can get in from the outside except through the regular entrance of the new hive. The chances are that even after you have done this the bees will make very poor work at emptying the combs, and if they are gathering, just as like as not they will fill more honey into the combs. But you can cut out the combs, put them into a dish, set an empty hive-body on the hive, and set the dish in it, close up bee-tight, and the bees will make a good job of cleaning out.

## Controlling Swarms

Knowing that you ran outapiaries for comb honey, would you kindly tell me the best plan to control swarming as far as possible. I want to put an outyard three miles from home and cannot be there all the time; I have your "Fifty Years Among the Bees," but don't seem to get what I want to know from that.

ANSWER.—I doubt if there is any one thing in beekeeping that I have worked harder upon than finding an answer to your question; and I think I succeeded in keeping down to a minimum the matter of swarming in outapiaries. Exactly the plans I used are given in full in "Fifty Years Among the Bees." I don't think I can add anything to what is there given; but I may help by calling attention to what is given. I think it will pay you to study carefully all contained on pages 156 to 186.

Turn to page 174, "Preliminary Work," and you will see that before there was any real danger of swarming we began once in about ten days to look for queen-cells, and up to the bottom of page 176 you will find particulars as to proceeding up to the time when it would no longer do to depend upon killing cells. Then radical measures were taken, by taking away for a period of perhaps ten days the queen, or the brood, or both. One of the plans to do that was the "put-up plan," page 157. Although it is given there as a plan for proceeding after a colony had actually swarmed, we used it later be-

fore swarming had actually taken place. We may use the "Excluder Plan," page 177. It may be "Forced Swarming" (page 166), more commonly called shaken swarms. More likely than any other way, the "Dequeening Treatment" (page 181) will be used. This you will find given in the following very few words: "The queen is removed, the queen-cells are killed, and in ten days the queen-cells are again destroyed and their own queen returned or another queen given."

I don't know of any better way than one of the foregoing ways to prevent swarming in an outapiary, and if you find any point upon which you would like to ask further light, it will be a pleasure for me to answer.

## Rearing Queens

How early do you consider it advisable to rear queens in the State of Alabama?

ANSWER.—As a rule good queens can hardly be reared earlier than the last of May in my locality in northern Illinois. I don't know how much earlier the date would be in Alabama; perhaps a month or two.

## The Swarming Problem

I keep bees in four outyards, and they are run for comb honey. One often sees articles on swarm prevention for outyards for extracted honey, but comb or section honey is a different and more serious proposition. The questions which now concern me are not so much swarm prevention as the best methods of treating bees to secure the most honey and no increase.

I doubt whether there is any method of non-swarming manipulation whereby one can get as large crop of section honey as to have prime swarms and prevent afterswarms in a locality of summer or clover flow, and fall flow of about equal proportions. However, I don't want increase and so here is the rub: I have followed your method as described in "Fifty Years Among the Bees" in my outyards for ten or a dozen years, and it is all right if done thoroughly and in time; but the question of lots of super room, big entrances, lots of ventilation, shade and things to aid non-swarming have been thrashed out in bee journals for years, and are valuable and good advice, but for all this, the *real problem* still remains, how to manage swarming with the least interference with the honey crop. I have never been able to get much super work done with the queen caged or killed and virgin given, or when a colony prepares to swarm. Bees loaf, build burr-combs, crowd honey into the brood-chamber, and this time is lost right in the best of the honey flow. Others report work with the queen caged or absent, but it doesn't happen here; possibly they extract.

Here is a plan I have thought of trying this season, a week or ten days before swarming: Start cells from the best queens. A couple of days before maturity of the cells, go through colonies and kill all queens except the best, and 6 to 12 hours later give each a cell.

1. Would one run too much risk of hatched queens leading a swarm?

2. If not, wouldn't this cause the least interruption in super work, and at the same time get better stock?

3. Also, would this be more successful if colonies so treated were given cell before any swarm preparation?

4. How long after queen is killed would you give an unprotected cell?

5. Would it pay to go through colonies in three to five days and look for other cells and destroy them?

ANSWERS.—1. If, at the time you give the cell, cells are not already started in the hive, I should not expect swarming; and perhaps not if you kill all cells already started; but not having tried it I am not sure.

2. It should, I think, cause as little interference as any; although I doubt if the interference would be less than with my plans as they work here; although they may not work so well with you.

3. Yes, but the later the better, so long as no cells are actually started,



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1. About a day.

2. It would seem hardly worth while, provided the cell you gave was quite ripe.

Instead of a ripe cell, it might be worth while to try a virgin less than a day old. Such a one, I think, could be dropped in the hive without caging, at the time you kill the old queen.

## Alexander's Plan for Increase

1. Would you advise me to use Alexander's plan for increase in a small outapiary, and is it a good way to make increase?

2. Can you tell the best way to introduce a queen at an outapiary, when using this plan for increase?

3. Are there many boys in the bee-business; if so, why don't the American Bee Journal have a page for the junior apiarists?

MAINE.

ANSWERS.—1. The plan is good, and would work all right in an outapiary. But you will most likely be sadly disappointed if you expect as much as has been claimed for the plan; for it has been claimed that you have two good colonies in place of one to begin the clover harvest, and that you will get nearly twice as much surplus as you will by not dividing.

2. Any plan that is good in general will work well here; indeed, there is not much risk with any plan, for when the queen is given the bees feel themselves hopelessly queenless.

3. There are many boys engaged in bee-keeping; but in connection with older beekeepers, generally their fathers. So few boys are beekeepers on their own hook that it is not at all likely enough of them could be mustered to sustain a department of their own.

## Wintering—Increase

1. If I should remove a brood-frame from each side of a 10-frame Danzenbaker hive and substitute a solid board, and fill in the space at the ends of the frames with a board of the proper thickness, would it be equal for wintering to a hive with an outer case packed in the usual way?

2. Do you think it a good way to make increase and build up, as in an article by Hattie L. McManus, page 192, American Bee Journal for June, 1915.

WISCONSIN.

ANSWERS.—1. My guess would be that it would be nearly as good, but not quite.

2. Not having tried that exact plan, my opinion could not be very conclusive; but the plan looks hopeful enough to warrant that you would experience no great loss to give it a trial.

## Increasing—Controlling Swarms

I have 30 beehives and do not wish any more than 30 colonies. Twenty-seven of the hives have bees in them, nearly all Italians. They have straight combs made on full sheets of foundation and wired. The other three hives lost their bees during the winter, but have the full drawn combs; have a few weak colonies. I use the precaution of giving plenty of storage room and ventilation to prevent swarming, and have been pretty successful so far in keeping down too great number of swarms. I want to have a few swarms this season on account of the seeming good prospects for a honey flow from white clover and alsike.

Of course, I expect to fill my empty hives with my first swarms, but what shall I do with any other swarms that I may have? Would it be practical to unite them with my weaker colonies; if so, how would you unite them? Please give your plan of uniting with newspapers between colonies. How many sheets of paper do you use? When uniting a swarm with a weak colony would you kill either queen?

KENTUCKY.

ANSWER.—Yes, you can unite swarms with weaker colonies; but it may be as well or better, in your case, to unite the weaker colonies first. Uniting them by the newspaper plan is very simple. I generally use a single thickness of newspaper, but have

used two. Lay the newspaper over the top bars, set the other hive on that, of course without its bottom-board, and cover up. That is all there is to it; the bees will do the rest. There is no chance for a bee to get out of the upper hive until a hole is gnawed through the paper, and then one bee at a time will get through at first, and there will be no fighting.

If there be any choice of queens, kill the poorer, and it will be as well to do this two or three days previously, and then set the queenless one on the other. But if you leave it to the bees they will be likely to kill the poorer.

After doubling the weak colonies you have an increased number of empty hives, and can now double up swarms. After having the first swarm, when the next swarm comes, instead of hiving it in an empty hive, hive it in the same hive with the first swarm. Then hive the third and the fourth in the same hive, and so on.

There's another way you can do to keep down increase. When a colony swarms, return the swarm and kill or remove the queen. It will be better if the queen be clipped. Then a week later kill all cells but one. A better way is to begin listening with your ear to the hive about a week after you returned the swarm. Go in the evening, after the bees have stopped flying and you will hear better. When you hear the young queen piping, go to the hive the next morning and kill all the cells. That's all.

## Getting a Swarm from Between Walls—Requeening—Foulbrood

1. Could a swarm of bees be taken from the walls of a house with the aid of a bee-escape, without tearing off the boards? If it cannot, how would you get it out?

2. Would it be of any value to requeen just before a honey flow? I would like to change my strain of bees to 3-banded Italians, and would like to do it early.

3. Which is the best way to treat hives where bees died of foulbrood several years ago, and have never been used since?

IOWA.

ANSWERS.—1. By means of an escape you could get all bees that would fly out, but not the queen. By injecting carbolic acid, or something of the kind, you might get the queen.

2. Almost any time is a good time to requeen if you requeen with better stock. If you requeen just before the harvest, there

may be a little break in brood-rearing that may affect the harvest more than requeening at the close of the harvest. On the other hand, requeening with a young queen just before harvest might stop the colony from swarming, and so increase the crop.

3. Some good authorities think that such a hive should be scorched inside with a painter's torch, or else have straw put in it and burned; and that no matter whether it has been freshly occupied by a diseased colony or not for years. Others think there is no need to give the hive any treatment whatever. But all agree that the only treatment for the combs is to burn or melt them.

## Distances for Proper Mating

1. In mating queens does it make any material difference if they are mated with drones from the same queen mother; if so, what is the difference?

2. Also how far would one have to put his mating nuclei away from other bees to insure mating with proper drones.

3. What would you consider a good test to prove that bees were pure Italians?

WISCONSIN.

ANSWERS.—1. Like any other case of inbreeding, there is danger of weakness and deterioration.

2. Some think a distance of half a mile is pretty safe. A mile is better, although there may be a possibility of trouble at a distance of two miles or more.

3. The orthodox test is the three yellow bands on all the workers. But a few workers off color should not condemn a colony, for they may have come from another colony, as bees do a good bit of straying.

## Returning Afterswarms

In returning an afterswarm to the parent colony, where the hive is some distance above the ground; in fact, too high to permit of conveniently hiving them at the entrance, would you advise shaking them in an empty super placed on the parent hive?

ILLINOIS.

ANSWER.—Yes, your plan of returning is all right; but it would be better and easier to avoid the trouble of returning by preventing the afterswarm in the way that has been given so many times. Afterswarms are more ticklish things than prime swarms, and sometimes when you try to hive an afterswarm it takes into its head the foolish notion to take its departure, leaving you to gaze somewhat foolishly after it.

# REPORTS AND EXPERIENCES



## A Skunk and a Bee Tree

One day last March I started to my traps, and as I was walking along I saw a skunk track. I followed it and it led me by an elm stub  $3\frac{1}{2}$  feet in diameter and 12 feet high. The snow was packed down and I noticed a lot of little black specks on it. When I looked closer I saw they were bees' heads. The skunks had eaten the bees, all but the heads; also a small amount of broken comb was on the ground. The hole in the stub faced the east, and was about 12 inches in height, and by looking in I could see comb.

The skunk I was tracking had gone on. I followed it and soon got it; it yielded me \$2.50. About a week later, as I was going by the stub, I had my ax, so I chopped into the tree to see if there was enough honey worth bothering with. I did not cut the tree down, but commenced chopping at the bottom a strip about a foot wide, and kept chopping until I had an opening as high as my head. All I could see was honey. I went home,

hitched the horse to the cutter, took a wash-tub and boiler with me and filled them up; drove home again, got another tub and filled that full of nice white honey. I also got a potato crate full of empty combs which I made into wax and shipped it to A. G. Woodman. I sold the honey, three pounds, for 25 cents, and it brought me over \$15 beside what I kept for my own use or gave away. I have cut lots of trees, but not one ever had as much honey as this one.

Riverside, Mich. ARCHIE KELLEY.

## Publicity for Honey

It has been with much interest that I have followed all that has been said in both the American Bee Journal and other bee publications for some months past, about advertising honey. The interest seems to be growing, and from your issue of March 1, it seems that something definite may be done. The article, "A National Publicity Campaign for Honey," is a fine one.

# American Bee Journal

In my very small way I have already learned the value of advertising. Three years ago, when I offered my honey in jars, the merchants gave me the laugh, saying the Cuban people did not eat honey; they have an idea it is not healthy, being too heating, and this idea is furthered by the physicians. I left a few jars where they would let me to be returned or paid for, and I never had any returned. Every chance I had, and I schemed in every way to make chances, I wrote something in our local papers about bees or honey, receiving more or less ridicule. Last year, as you know, I printed a small booklet called "Campanilla," in which I described my honey and methods of extracting and marketing. This I mailed to various addresses in Cuba and the United States. In this booklet I had, as you advised me, my prices high, but I am very glad I did. It places my honey on a higher plane than the ordinary.

My advertising in the United States has not brought me any great amount of business so far but scarcely a mail comes without something from someone about honey, where can it be had in the United States, or please give me some cooking receipts for honey, etc. To my belief, telling people how to use honey is away ahead of any other advertising.

My jar business has increased steadily, and I had to buy 100 gross of empties to carry me through this season. This year I have sold in barrels my best honey at 72 cents per gallon, but as yet I have not enough local trade to consume it all. Yesterday I received a telegram from a firm in Cuba, "Ship me all the Nos. 32 and 12 jars you have." This firm sent me a check March 1 for \$100 to settle for honey bought in April. What the jar business nets is easily figured; about four times the barrel price. Holguin, Cuba. D. W. MILLAR.

## Excluders

I am a farmer beekeeper and run mostly for bulk comb honey. I have a number of hives with supers, same size as lower bodies, in which I use the Hoffman frame. Last year is the first time I ran my hives in this way, i. e., large super with frames in which to store the surplus, and was fortunate enough to escape without the queens going into the upper story. I did not use queen-excluders.

Now the question is: Will I fare this well every year? I would rather not use the excluders if they are not necessary, as I think to some extent they retard the bees from entering the upper story. I only use strips or starters of foundation. As you are a large honey-producer, I would like to have your opinion as to whether or not there is much danger of the queens entering the upper story when running as I do for bulk honey? NATHAN CLAIR.

Mendon, Mo.  
[If you were to use combs already built you would have brood in the upper story about half of the time, because the Langstroth hives are both too small and too shallow, even the 10-frame hives. The latter, however, are better than the 8-frame hives as they give more room to the queen in the lower story.]

It is probable, however, that in running for chunk or bulk honey you will have but little trouble with the bees breeding in the upper story. You will find it to happen in seasons when the honey flow is irregular, because in such seasons the bees build comb to place the crop, and the bad weather causes them to empty a part of the cells. It quite often happens that the queen lays in the upper story at such a time. But whenever the season continues steadily to yield honey there is but little danger of the queen finding any room above if she happens to go there.

On the whole, however, if I were in your place, I would use queen-excluders. In our large hives, with deeper frames, and producing extracted honey, we do not use excluders. Once in a while only do we find brood in the supers.—EDITOR.]

## The New Disease

The new bee-disease struck this locality

the past season. The symptoms described in the bee papers apply here with one exception, namely, the abdomen does not swell; it *shrinks*, it becomes much smaller than normal.

It only attacks mature bees. In one colony of dark hybrids every mature bee was killed. They had built up strong, producing some surplus. The disease disappeared with the last mature bee. It did not attack queens or drones.

I tried introducing queens and cells (in one colony), but they would not accept either. They seemed at first to be attacked by robbers, but upon closer inspection the apparent robbers proved to be occupants of the hive. Upon opening a hive the first thing to attract my attention would be healthy bees chasing diseased ones across the top-bars.

They lose their down and become shiny black and greasy looking and smaller in size. Their wings become spread, and slightly raised and narrowed. They have this appearance before or about the time the healthy bees attack them. They do not seem to die directly from the disease; the life is hounded out of them by the other bees much the same as they kill drones. At first I thought the weather had something to do with the cause and cure, it being very wet when it started, about June 1, and dry when they recovered, the last of June. But since then I believe the cure was in their killing every diseased and mature bee. Next season? GEORGE E. MORRIS

South Barre, Vt.

## Paralysis

In my bee-yard there appeared a disease of the adult honeybee in three colonies last winter, and in other colonies in the spring and summer of 1915.

In the first three colonies almost every day there would be a few bees that would fly and drop in the snow, although it was too cold for bees to fly. A considerable number would have greatly swollen bodies and were full of fluids and had a greasy, shiny look. They looked like they had been in syrup or honey. Every day that was warm enough for flight, the bees carried out great numbers of bees that were daubed and swollen. When spring finally came these colonies were greatly depleted, and one was so weak that it was robbed out almost the first thing. Very soon I found two other colonies were affected in the same way. But as warm weather came on I noticed that the number of bees that had swollen bodies was much less, as was also the number with the shiny appearance.

But there were other characteristics dissimilar to those of winter time. There was great commotion all about the entrance and a considerable area of ground in front of the hive, a seething quivering mass. The colony spirit seemed to have changed from a desire to store honey to one of self-destruction. Many of the bees that were ejected looked as if nothing were the matter with them, but were unable to return to the hive. A peculiar thing about many of the ejected bees was that, contrary to the natural instinct of the bee to relieve the colony of her presence when disabled, they seemed to resist being ejected, would pull back. It reminded one of incidents on the police force, when it took two or three "cops" to put out one "drunk." So it looked like these sick bees did not know that they were diseased and resisted being ejected; but once out, being unable to return, lay with wings quivering. I assure you that it looks bad to the bee-lover to see his harvesters lying by the gallon in front of the hives in this condition.

During the season just passed I had eight colonies affected as described; all of them pure Italians. I had some hybrids and a few black bees in the yard, but none of them had this disease. In this yard of 60 colonies, 8 were diseased. A part of them recovered enough to build up and store some honey from fall flowers; the others had to be supplied with honey for winter stores. All seemed to have recovered fully by late fall. Today (Jan. 22, 1916) we have had a fine warm day and the bees had a good flight after three weeks' confinement. To my surprise, I found three other colonies with the disease. They, too, were doing just as the others had done. These three colonies were not affected the past season, but did big work storing, and went into winter with abundant stores, strong in young bees and plenty of insulation.

During the past season I supposed that my bees had bee-paralysis, or is it that other disease of the adult bee, Isle-of-Wight dis-

ease or *Nosema Apis*?

I am sending some of the diseased bees to Dr. Phillips, of Washington, D. C., for examination. I am very anxious to learn just what the disease is, and hope some correspondent will be able to give me light, and if possible, a remedy. H. C. GADBERRY

Miami, Mo.  
[Mr. Gadberry's description is similar to that of the so-called "paralysis" which answers in practically all particulars to the maladies mentioned on pages 14 and 15 of the January number. Personally, we ascribe the trouble to the exceedingly wet season of 1915. As the climate of the Mississippi Valley is usually dry, there is probably no danger of such a scourge as they have had in England under the name of Isle-of-Wight disease, but the complaints are similar. Our columns are open to the discussions and suggestions of beekeepers and scientists on this matter.—EDITOR.]

## Statement of Ownership, Management Circulation, Etc.,

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[Signed] M. G. DADANT, Manager.

Sworn to and subscribed before me this 3d day of April, 1916.

[SEAL]

R. R. WALLACE.

Notary Public.

My Commission expires Sept. 21, 1917.

## Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.]

### BEES AND QUEENS.

**FINEST Italian Queens.** Send for booklet. Jay Smith, 1150 DeWolfe St., Vincennes, Ind.

**PHELPS' Golden Italian Queens** will please you.

**TWENTY-FIVE colonies** of bees for sale. G. W. Lindle, Muscatine, Iowa.

**FOR SALE** cheap 45 colonies of bees, tractor and other supplies. Write, Mary Vernon, Carlyle, Ill.

**FINE three-banded Italian queens.** Circular and price list free. J. L. Leath, Corinth, Miss.

**TELL** several thousand people what you have for sale with a few words in this department.

**BEES AND QUEENS** from my New Jersey apiary. J. H. M. Cook, 84 Cortland St., New York City.

**PHELPS' Golden Italian Bees** are hustlers

**QUEENS FROM THE PENN CO.** See our large ad. elsewhere in this Journal.

**DOOLITTLE & CLARK's** Italian breeding queens will be ready for delivery May 1. Prices, \$10, \$5.00, and \$2.50. Marietta, N. Y.

**READY** now 1-lb. 3-band Italian bees with queen, \$1.65. 2-fr. nuclei with queen, \$2.25. Rosedale Apiaries. J. B. Marshall, Big Bend, La.



# American Bee Journal

RHODE ISLAND northern-bred Ital. queens, \$1.00. Circular. O. E. Tulip, Arlington, R. I.

FOR SALE—Tested hybrid queens by return mail at 25c each.  
Peter Schaffhauser, Havelock, N. C.

NORTHERN-BRED Italian queens of the E. Mott strain. June, unt., 6c; July, 75c. Send for free list.  
Earl W. Mott,  
Glenwood, Mich.

VIGOROUS prolific queens, \$1.00; 6 \$5.00; June 1. My circular gives best methods of introducing.  
A. V. Small,  
2302 Agency Road, St. Joseph, Mo.

PLACE your order early to insure prompt service. Tested, \$1.25; untested, \$1.00. Italians and Golden.  
John W. Pharr,  
Berclair, Tex.

THREE-BANDED Italian bees, \$1.00 a pound. Untested queen, 65c. Tested, \$1.00. Select tested, \$1.25.  
Rosedale Apiaries,  
J. B. Marshall, Big Bend, La.

IF YOU wish to get early queens and comb-less packages place your orders early with the Marchant Bros., Union Springs, Ala. See our ad in May Journal.

FOR SALE—Bright Italian queens this season, 75c each; \$8.00 per dozen. Safe arrival and satisfaction guaranteed.  
T. J. Talley, Rt. 3, Greenville, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

QUEENS from my honey-gathering strains will be ready to ship April 1st. In honey-getting qualities they have few equals. See my advertisement elsewhere in this Journal.  
D. E. Brothers, Attalla, Ala.

GOLDEN ITALIAN QUEENS. Select tested, \$1.25. Tested, \$1.00. Untested, 70c; 12, \$8.00. Select untested, 80c; 12, \$6.00. Untested, July, 10c off each; \$1.00 per doz. off. No foul-brood. D. T. Gaster, Rt. 2, Randleman, N. C.

QUIRIN'S superior northern-bred Italian bees and queens are hardy, and will please you. More than 20 years a breeder. Orders booked now. Free circular. Honeydew for bee food, 5c a lb. H. G. Quirin, Bellevue, O.

ITALIAN QUEENS, prompt service; queens mailed to purchaser in new style of introducing cage that is safe and sure. Bees from a one-frame nucleus to a carload. Write for price list on colonies, queens and nuclei.  
J. F. Diemer, Rt. 3, Liberty, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Golden and their honey-getting qualities. Price, \$1.00 each; Tested, \$2.00; Breeders, \$5.00 and \$10.00.  
2Att J. B. Brockwell, Barnetts, Va.

FOR SALE—Bright Italian queens at 75 cts. each; \$7.50 per dozen or \$60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed.  
W. W. Talley,  
Rt. 4, Greenville, Ala.

FOR SALE—Fine Italian bees and queens. Untested, \$1.00; 6 for \$5.00; 12, \$6.00; 100, \$60. For prices on nuclei and pound bees see my big ad in this paper for April and May.  
J. F. Archdekin, Bordelonville, La.

INDIANOLA APIARY offers bees and queens for sale. Untested, 75c. Tested, \$1.25. Bees in 1-lb. packages, \$1.00; 1-frame nucleus, \$1.25. Add price of queen if wanted.  
J. Warren Sherman, Valdosta, Ga.

FOR SALE—Good Italian queens, untested, 75c; tested, \$1.00; nuclei, 2-frame, \$3.00; 1-lb. package, \$2.00; 2-lb. package, \$3.00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,  
1004 Park Ave., Little Rock, Ark.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; Tested, \$3.00; Breeders, \$5.00 and \$10. C. W. Phelps & Son,  
3 Wilcox St., Binghamton, N. Y.

LEATHER COLORED "Nutmeg strain" of queens, \$1.00; doz., \$10. Tested, \$1.50. Special price on large lots. Return mail.  
A. W. Yates, 3 Chapman St., Hartford, Conn.

LEATHER COLORED 3-banded Italian bees. \$2.25 for 2-lb. pkg. Untested queen, 75c. Tested, \$1.00 by mail. Safe arrival guaranteed. No diseases around here. Send your orders to  
C. H. Cobb, Belleville, Ark.

"QUEENS OF QUALITY" reared from a daughter of one of Dr. Miller's famous queens, \$1.00 each by return mail. After July 1st, 75c each; \$8.00 per doz.  
J. Ivan Banks, Dowlstown, Tenn.

QUEENS—Improved 3-band Italians; bred for business; June 1 to Nov. 15. Untested queens, 60c each; doz., \$7.20. Tested, 85c each. Safe arrival and satisfaction guaranteed or money refunded.  
Sinking Creek Apiaries, Gimlet, Ky.

LET us send you price list and descriptive circular of our bees and queens, and if you will tell us what sized and how many packages you may want, we will be glad to write you what the express will amount to.  
R. V. & M. C. Stearns, Brady, Tex.

GOLDEN ITALIAN QUEENS by June 1st. Untested, 75c or \$1.00 per half doz.; \$8.00 doz. Select untested, \$1.00. Tested, \$1.25 each or \$7.00 per half doz.; \$12 a doz. Breeders, \$3.00 to \$5.00 each. Purely mated guaranteed. Send for circular.  
J. I. Danielson,  
Rt. No. 7, Fairfield, Iowa.

CARNIOLAN, golden, and 3-banded Italian queens. Tested, \$1.00. Untested, 75c; 6, \$4.20; 12, \$7.80. 1/2-lb. bees, 75c; 1-lb. \$1.25. Nuclei, per frame, \$1.25. No disease; everything guaranteed. Write for price list.  
C. B. Bankston, Buffalo, Leon Co., Tex.

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, \$1.00; 6 for \$5.00; 12 for \$9.00. Write us what you want.  
T. S. Hall, Talking Rock, Ga.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, \$1.00. Select untested, \$1.25. Tested, \$1.50. Select tested, \$2.00.  
H. W. Fulmer,  
Box 10, Andalusia, Pa.

FOR SALE—250 colonies of high grade Italians; fine location on virgin alfalfa at a bargain. New modern equipment, comb and extracted. New country, fine climate, and bee business developing rapidly. Splendid opportunity for energetic man.  
A. W. F. Lee, Cordell, Okla.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, \$8.00; Select, \$1.00 each; dozen, \$10. Tested Queens, \$1.25; dozen, \$12. Safe arrival and satisfaction guaranteed.  
H. C. Clemons,  
Rt. 3, Williamstown, Ky.

FOR SALE—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75c; 6, \$4.25; 12, \$8.00. Tested queens, \$1.25; 6, \$7.00; 12, \$12. For select queens add 25c each to above prices. Queens in quantity lots or bees by the pound, write for prices.  
Robt. B. Spicer, R.F.D. 181, Wharton, N. J.

HAVING secured breeders of Dr. Miller, we are offering daughters of his famous strain of Italians at the low price of \$1.50 each. Queens of our own strain at 75c each. One pound bees, \$1.50; 2-frame nuclei, \$2.25. Full colony in 8-frame hive at \$6.50; 10-frame, \$7.50; 200 colonies for spring delivery at \$6.00 each, 10-fr. hives. The Stover Apiaries,  
Mayhew, Miss.

MULLIN'S Unrivaled Italian Queens. Gentle and prolific, three-banded, and one of the very best honey strains. After May 1st to July 1st, untested queens, \$1.00 each; \$6.00 per dozen. After July 1st, special rates. Three-frame nuclei with untested queen, \$2.75. After June 1st try one; you will want more. Satisfaction guaranteed.  
O. S. Mullin, Holton Kan.

CARNIOLAN GOLDEN and three-banded Italians. One untested, 85c; 6, \$4.80. Tested, 1, \$1.25; 6, \$7.20. Breeders, \$4.00. Bees by the lb., \$1.25 per lb. Nuclei, 1 fr., \$1.75; 2 fr., \$2.75; 3 fr., \$3.50, without queen. Full colonies in A. I. Root hives with Hoffman frames with queen, 8-fr. hive, \$7.50; 10-fr., \$8.00.  
D. L. Dutcher, Bennington, Mich.

QUEENS by return mail or your money back; guaranteed purely mated, 3-banded Italians, northern bred strain for gentleness, honey gathering and wintering. Select untested, \$1.00 each; 6 for \$5.00. Select tested, \$1.75 each. Write for price on large orders. State inspection certificate. Satisfaction guaranteed. J. M. Gingerich, Kalona, Iowa.

A DAUGHTER of one of Dr. Miller's best honey queens and the Beekeepers' Review for 1916 for only \$2.00. A daughter of one of the best honey getting queens selected from 1100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the Review for 1916 for only \$1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy.

BEES AND QUEENS—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; \$8.00 per dozen; \$60 per hundred. Tested queens, \$1.25 each; \$12 per dozen; \$85 per hundred. Three frame nuclei, \$1.25 each; \$200 per hundred. Bees 1/2-lb. pkgs., 75c each; \$60 per hundred; 1 lb. pkgs., \$1.00 each, \$85 per hundred. Add price of queens to above pkgs. Complete catalog free on application  
Spencer Apiaries Co.,  
Nordhoff, Calif.

FOR SALE—24 colonies of Italian bees at \$1.50 each; 20 colonies with mismatched Italian queens, \$1.00 each; 8 colonies of light-colored hybrids at \$3.50 per colony; all from the J. P. Moore strain; all in 8-frame bodies in winter cases; mostly the Quinby standard full-depth self-spacing Hoffman frames, 8 to each hive; all combs straight, and all strong and healthy with plenty of honey; f. o. b. here.  
Wilmer Clarke,  
Box 200, Earlville, Mad. Co., N. Y.

FOR SALE—36 colonies of bees in 8-frame hives; 50 supers full of frames and drawn comb; 30 brood-frames full of honey; 20 comb-honey supers and a lot of bait combs; 30 queen-excluding honey-boards; 10 Porter bee-escapes; 8 drone-traps; 100 new Hoffman frames not nailed; 100 or more other frames; 1 Cowan honey-extractor; 1 Doolittle wax-extractor; all of last year's wax and cappings. Must all go in a lump. Sale here on the farm, 3 1/2 miles from Livermore. At \$200.  
S. C. Boyle, Bode, Iowa.

CARNIOLAN, Golden and Three-Banded Italian queens from April to October. Tested, \$1.00 each; 6, \$5.40; 12, \$10.20. Select tested, \$1.25 each; 12, \$13.80. Untested, 75c each; 6, \$4.20; 12, \$7.80. Breeders, \$3.00 to \$5.00. Virgins, 50c each; 6, \$2.50; 12, \$4.00. Bees, 1-lb., \$1.25; 2 lbs., \$2.25; 1/2 lb., 75c. Nuclei, 1 frame, \$1.25; 2 frames, \$2.25; 3 fr., \$3.00. Full colonies with tested queens, 8 fr., \$6.50; 10 frame, \$7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.  
I. N. Bankston, Buffalo, Tex.

FOR SALE—35 colonies pure Italian bees with select tested queens of J. P. Moore strain, \$4.50 per colony; 35 colonies with mismatched queens from same strain, \$4.00 per col.; 35 cols. light colored hybrids from the same strain with queens, \$3.50 per col., all in 8-frame bodies in good winter cases, mostly the Quinby standard, full depth self-spacing Hoffman frames, 8 to each hive, all combs straight, and all strong and healthy with plenty of honey, f. o. b. here.  
Wilmer Clarke, Box 200, Earlville, Mad. Co. N. Y.

FOR SALE—Three-banded Italian bees, 3 frame nuclei with queen, \$3.00; without queen, \$2.25. We have more bees than we can manage, and can, therefore, supply you with the biggest, strongest nuclei you will be able to find anywhere. Our bees are all on the standard size Hoffman frames, combs built on full sheets of foundation and wired frames. We are now shipping nuclei and can now fill your order promptly. Bees guaranteed to be free from disease.  
Hyde Bee Company, Floresville, Tex.

# American Bee Journal

## HONEY AND BEESWAX

**WANTED**—Comb, extracted honey, and beeswax. R. A. Burnett & Co., 6A12t 173 S. Water St., Chicago, Ill.

**WANTED** to buy a quantity of dark or amber baking honey. State price and source gathered from. A. G. Woodman Co., Grand Rapids, Mich.

**COMB HONEY** our specialty. Highest market prices obtained; prompt returns made. Send us your shipments. Albert Hurt & Co., New Orleans, La.

**NEW CROP** of rich, white mesquite and catclaw honey. Bulk comb and extracted. Comb in two 60-lb. cans, 11c; in 6-10 lbs., 11½c; in 12½ lbs., 12c. Extracted, 2c per pound less. C. S. Engle, Beeville, Tex.

**FOR SALE**—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here. B. A. Hadsell, Buckeye, Ariz.

**FOR SALE**—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

## FOR SALE

**FOR SALE**—200 colonies of bees, 5 acres of land. N. L. Anderson, Spearsh, S. Dak.

**HOMESTEAD, SCHOOL, State Lands** suitable for poultry, fruit, bees. Booklet, 10c stamps. Joseph Clark, Sacramento, Calif.

## HONEY LABELS

**HONEY LABELS** that create a favorable impression on the buyer. Dealers admire them and give them prominence. Catalog Free. Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

## SUPPLIES.

**METAL TOP covers, T supers;** all new, to exchange for honey. Goldenrod Apiary, Lenox, Iowa.

**GOOD second hand 60-pound cans,** 25c per case of two cans f. o. b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O.

**FOR SALE**—Good second-hand 60-pound cans, 25c per case of two cans, f. o. b. Chicago. Cash with order. E. H. Bruner, 3836 North Kostner Ave., Chicago, Ill.

**FOR SALE**—10 new 10-fr. dovetailed 1-story hives, nailed and painted white two coats at \$1.35 each; G. B. Lewis make. Fred H. May, Meredosia, Ill.

**FOR SALE**—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

**BEE-KEEPER,** let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co., 4Atf Greenville, Tex.

**NOTICE**—Beekeepers when in need of supplies write us for prices. We can save you money. We make a specialty of odd sized hives. The M. C. Sisbee Co., Cohocton, Rt. 3, N. Y.

**FOR SALE**—Medium brood foundation, one to ten lbs., 52c per lb. Up to 25 lbs., 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade. J. F. Archdekin, Bordlonville, La.

**FOR SALE**—150 Alexander feeders, 12c each, used one season. \$16 cider mill, \$8.00. 800 wire moving screens, strong frame, 600-8 fr., 4c; 200-10 fr., 5c. 4-90 gal. honey tanks, used one season, \$6.00 each. New \$70 Reflex camera, \$55. An Eastman 4x5, 18 in. bellows, cost \$32, \$15. 100 8-fr. hive bodies, painted, frames wired, 50c each. Empty 60-lb. cans, 2 in a case, 40c each. Will sell for cash or will trade for honey, or bees in two-pound packages. Wesley Foster, Boulder, Colo.

**SECTIONS \$2.85** per thousand. The Beekeepers' Review is making a lead on sections and furnishing their subscribers with any make you prefer at from \$2.85 to \$4.50 per M. Order the same make of section as usual, but do not send us but \$4.50 per M. for the No. 1 grade and 50c less for the No. 2 grade. One make can be furnished as low as \$2.85 per M. for the No. 2 plain. Do not buy a single supply for the bees without first investigating our cooperative plan of buying. Write your wants to the Beekeepers' Review, Northstar, Mich.

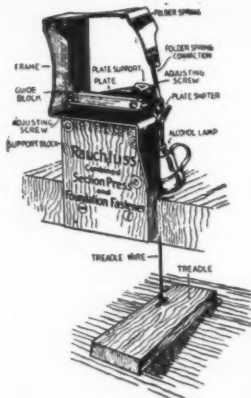
**DEER HEADS** nicely mounted. Will trade for bees. O. G. Mills, Bayfield, Wis.

**HATCH WAX PRESS** almost new, \$3.50. Ed Swenson, Spring Valley, Minn.

**KODAK** work finished and mailed in 12 to 24 hours. Send for sample and free booklet, "How to Make Money With a Kodak." Webb's Kodak Studio, Morganton, N. C.

**FOR SALE**—Indian motor cycle, \$60. Deering mower, excellent condition, \$15. 400 potato sacks, 3c each. 30 seamless bags (new) 20c each. Will trade for honey. Wesley Foster, Boulder, Colo.

## Make More Profit by Reducing Cost of Production



Comb-honey producers can put up their sections complete in less than half the time with a **Rauchfuss combined section-press and foundation fastener**. Now used by hundreds of Western beekeepers who would not think to be without it any more.

It is guaranteed to do more and better work than any other device on the market. Your money back if not entirely satisfactory. Made for 4¼x4¼ and also for 4x5 sections.

**Price, \$3.00** complete with lamp and treadle, delivered, postpaid, anywhere in the United States. Write for 68-page illustrated catalog of the best Bee-supplies made.

**THE COLORADO HONEY PRODUCERS' ASSOCIATION**  
1424 Market Street, Denver, Colorado



Our queens are very prolific; great hustlers; bees swarm but little, and are of a beautiful light leather color. Our Queen Booklet tells how to rear the finest queens. It is free for the asking. Prices from June 15th to Sept. 1st.

## QUEENS

One, \$1.00; six, \$5.00; twelve, \$9.00.

## Bees by the Pound

½ lb., \$1.00; 1 lb., \$1.25; 2 lbs., \$2.00; 3 lbs., \$2.50.

"Our Bees are Gentle"

None, you won't get stung if you buy our Queens

Nothing but select queens sent out.

**Address, JAY SMITH**  
**1159 De Wolfe Street, Vincennes, Indiana**

## ITALIAN QUEENS—THREE BANDED



723 C Street,

From June 1st until Nov. 1st, only 75c each; 6, \$4.00; 12, \$7.50. Tested \$1.00; 6, \$5.00; 12, \$9.00. Of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey-gatherers. Send for my free circular and price list, and see the natural conditions under which my queens are reared.

**JOHN G. MILLER**  
Corpus Christi, Texas



**4 MONTHS FOR 10¢**  
Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

**Ask Us Your Hard Questions.**

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.



# American Bee Journal

## The Double-Walled Massie Bee-Hive

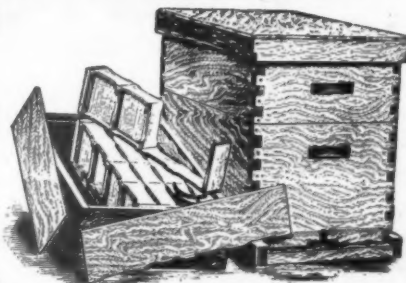
**Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate**

**Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames Made from White Pine**

### THE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee supply business has shown us that the **Massie is the very best hive**, and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey



### THE MASSIE HIVE

For Comb or Extracted Honey

**WHY NOT GIVE US A TRIAL ORDER?**

**SATISFACTION FULLY GUARANTEED**

**EARLY CASH ORDER DISCOUNTS**

We are also extensive manufacturers of **Dovetailed Hives** and all other **Apiarian Supplies**. If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

**KRETCHMER MFG. COMPANY, 1100 3d St.,**

**Council Bluffs, Iowa**

## GOLDEN ITALIAN QUEENS

If you care to know what others think of this strain of Golden, read these two letters from satisfied customers—

NAMPA, IDAHO, Feb. 12, 1916.  
MR. BEN G. DAVIS, Spring Hill, Tenn.

Dear Sir:—Yours at hand, and in reply will say you may book me for 200 untested queens, will give you dates later to ship. No, Mr. Davis, I do not care to part with the queen this season, but I think another season I shall send her in and probably one or two others and have you breed from them for me. The surplus was 250 pounds, comb honey, besides I drew four cards of brood from them. They cap their honey white. She is quite yellow and fair size. The workers are yellow and well marked and uniform color: drones extra yellow.

Yours respectfully, L. C. McCARTY.  
(The above queen is a Golden from my apiaries.)

RENO, NEV, April 16, 1916.  
MR. BEN G. DAVIS, Spring Hill, Tenn.

Dear Sir:—I have tested out several of your Golden Queens by the side of several leather and three-banded stock from seven or eight breeders in the last two years, and find your stock **superior to any of the darker races** in resisting and curing European foulbrood, and find them gentle, good winterers, and the equal of any for getting honey.

Rt. 1, Box 40,

M. W. HARVEY.

Safe arrival (U. S. and Can.), purity of mating, and satisfaction guaranteed.

### PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	\$1.50	\$7.50	\$13.50	\$1.25	\$ 6.50	\$11.50	\$1.00	\$ 5.00	\$ 9.00	\$ .75	\$ 4.00	\$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	11.00	18.00

Breeders, \$5.00 to \$25.00

**BEN G. DAVIS, Spring Hill, Tennessee**

## Sweet Clover Seed

### QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

### PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu. 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25C	\$2.00	\$5.10	\$16.00		\$ 4.80	\$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30C	2.75	6.75	22.50	\$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarified "Melilotus Officinalis"	20C	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

**PLEASE NOTE**—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

**YELLOW SWEET CLOVER**—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

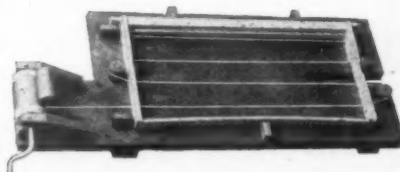
Be sure, however, to get the biennial variety as quoted above.

**DADANT & SONS, HAMILTON, ILLINOIS**

## OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, \$1.50; 2-pound packages, \$2.50; 10-pound lots, \$13; 100 pounds for \$120. Queens shipped with pound packages at 75 cents each. By mail at \$1.00 per dozen. Special prices to dealers in large lots.

**WM. ATCHLEY, Mathis, Texas**  
"The Texas Beeman"

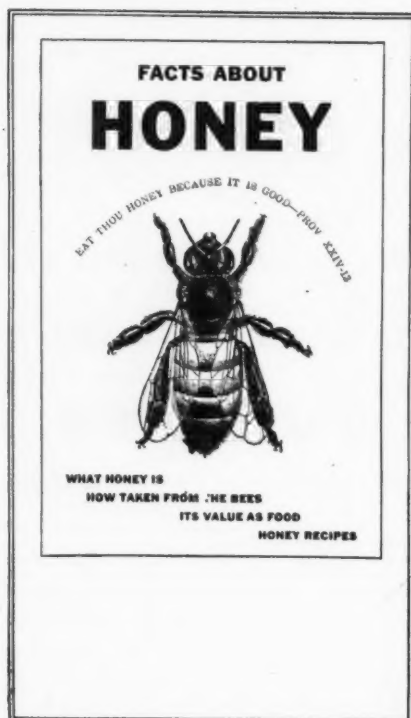


### WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, \$2.00.

G. W. Wright Company, Azusa, Calif.

# FACTS ABOUT HONEY



THE editorial on the "Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cook-

ing; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra	-	\$ 5.00
Less than 30 copies, postpaid, each \$	.03	1000 " " "	-	9.00
30 " " "	.75	2000 " " "	-	17.00
50 copies, postage extra	.75	5000 " " "	-	40.00
100 " " "	1.25	10,000 " " "	-	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, \$1.00; 1000 or more, \$1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

**American Bee Journal, - - - - - Hamilton, Illinois.**









# MARSHFIELD GOODS

## BEE-KEEPERS:—

We manufacture Millions of **Sections** every year that are as good as the best. The **CHEAPEST** for the Quality; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**

Our Catalog is free for the asking.

Marshfield Mfg. Co.,

Marshfield, Wis.

## THERE OUGHT TO BE QUALITY HERE

"We are furnishing Kenneth Hawkins, the 'Quality Hill Queen' Breeder, one of our 'Queens of Quality,' and will offer queens from one of The Review mothers crossed with his 'Quality Hill' Drones for 1916. We do not think one can make a mistake in buying this stock." No buyer of 24 or more Queens for delivery after June 15, can afford not to ask for our special discounts on these great honey gatherers.

The Review, Dec., 1915. This Townsend breeder exceeded the average of 100 colonies by over 500 per cent last year. Sure will be quality here. These excellent honey queens 1. \$1.00; 6. 5.00; 12. 9.00 until June 1. Later, 1. 75c; 6. \$4.00; 12. \$7.50. Write for booklet on Quality Hill Queens.

KENNETH HAWKINS, PLAINFIELD, ILLINOIS

## START THE SEASON RIGHT

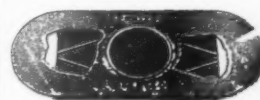
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

## PORTER BEE ESCAPE



**SAVES  
HONEY  
TIME  
MONEY**

For sale by all dealers.

If no dealer, write factory

R. & E. C. PORTER, MFRS.

Lewistown, Ill., U. S. A.

Please mention Am. Bee Journal when writing

## FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home  
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest. Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

## Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,  
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

## BEE SUPPLIES

Best Sections, Best Shipping Cases  
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.

H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

## Queens and Bees

FROM THE COTTON-BELT APIARIES

Will and must please you. Three-band Italians only. Prices from May 1st to July 1st as follows: Queens, untested, 75c each; \$4.00 for six or \$7.50 per dozen. Tested \$1.00 each; \$5.70 for six, or \$10.75 per dozen. Select tested, \$2.50 each. Breeding queens, \$5.00 each. One pound package bees, \$1.25; 25 packages, \$1.00 each; 2-pound package, \$2.25 each; 25 packages, \$2.00 each; 3-pound package, \$3.25 each; 25 packages, \$2.75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES  
Box 83, Roxton, Texas

## WHEN ORDERING SUPPLIES

Remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and G and Trunk Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Me.  
J. B. MASON, Manager

# BECAUSE IT LASTS

## That is One Argument in Favor of Cypress as a Beekeeper's Lumber



There are many qualities that make the value in lumber depending, of course, on the uses to which they are put. But of all virtues that of **endurance** comes first. The wood that resists rot influences longest, especially when the wood is used in a service by which it is exposed to wet and dry conditions and earth-contact—that wood is accredited with being able to give the user the greatest **INVESTMENT VALUE**.

No use tries the lasting qualities of lumber greater than that of Bee Hive construction. It is the very duce to get lumber that will not too readily rot—unless one gets Cypress lumber. Then there is a good show for endurance that means **real money saved on Repairs You Don't Have to Make**. Try it, Mr. Beekeeper.

### STUDY THE WOOD QUESTION

There's one way to get at this matter of endurance—through books of authority. Such are the 41 volumes of the internationally famous Cypress Pocket Library. These books are not "advertising"—they are authoritative references on file in the libraries of scores of technical schools and National institutes. Ask for Vol. 1 to start with; it contains the complete U. S. Govt. Rept. on Cypress, "The Wood Eternal," and a full list of the other volumes; then branch out until you cover the subject.

### SOUTHERN CYPRESS MFRS.' ASSOCIATION

1251 Heard National Bank Building, Jacksonville, Fla., and  
1251 Hibernia Bank Building, New Orleans, La.

For quick service address nearest office.

## DADANT'S FOUNDATION

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### EARLY-ORDER DISCOUNTS ON

## DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.

It will pay you to buy early.

**BEESWAX**—We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your **BEESWAX** worked into foundation at moderate rates.

**NOTE** Old combs cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

**DADANT & SONS,**  
HAMILTON, ILLINOIS.